

HOW TO GROW WORLD RECORD TOMATOES

Charles H. Wilber

A Guinness Champion
Reveals His
All-Organic Techniques



How to Grow World Record Tomatoes

by Charles H. Wilber

SB349
.W45
1999

How to Grow World Record Tomatoes

A Guinness Champion Reveals His All-Organic Secrets

by Charles H. Wilber

Copyright © 1999 by Charles H. Wilber

Publisher's Cataloging-in-Publication

Printed in the United States of America. All rights in this book are reserved. No part of the book may be used or reproduced without written permission except in the case of brief quotations embodied in articles and books.

The Guinness Book of Records is a trademark of Guinness Media, Inc.

Photos on the front and back covers, pages 9, 16, 69, 71 and 119 copyright © by Joyce M. Rodgers. Used by permission.

Wilber, Charles H., 1914 -

How to grow world record tomatoes: a Guinness champion reveals his all-organic secrets / by Charles H. Wilber.— 1st ed.

p. cm.

Includes bibliographical references and index

ISBN 0-911311-57-2

1. Tomatoes. 2. Organic gardening. I. Title

SB349.W55 1999

635'.642'5

QBI98-1382

Library of Congress Catalog Card Number: 98-74330

How to Grow World Record Tomatoes

A Guinness Champion Reveals His All-Organic Secrets

by Charles H. Wilber

Acres U.S.A.

P.O. Box 8800 • Metairie, Louisiana 70011

(504) 889-2100 • fax (504) 889-2777 • www.acresusa.com

Contents

Preface	<i>ix</i>
Foreword	<i>xi</i>
Introduction	1
My Story	3
About Tomatoes	19
Composting	23
Garden Location	35
Starting from Seed	39
Support Systems: Water & Cages	45
Setting the Plants	57
Pruning	77
How to Read a Tomato Plant	93
Tomato Pests & Diseases	95
Frost & Harvesting	103
Not Just for Tomatoes	109
Trials & Tribulations Along the Way . . .	117
Glossary of Terms	123
Index	127

Preface

I have used the term *dominion* as expressed in the Good Book. I take dominion to mean stewardship, not domination. Too many people think the imperative to increase and multiply and exercise dominion over the plants and animals of the earth means to squander, rape and destroy. That is not my perception. Stewardship means conservation and careful nurturing. That's what I do with my tomato plants. I nurture them — and nature always rewards those who nurture her carefully.

Foreword

Since the first day I met Charles Wilber more than ten years ago, I have been trying to figure out his gardening secrets. Everything at his place is organic, but his plants are so big that it's hard to believe that he doesn't have a secret stash of blue crystals tucked away somewhere. Mr. Wilber always has attempted to answer my non-stop questions, but always with a mischievous twinkle in his eye.

On my first visit, I made him climb up the scaffolding he'd built so I could take pictures of him



Barbara Pleasant

alongside his 20-foot-tall tomato plants. "It's the kudzu in the compost" he called down from his perch, grinning. Later, on the back porch where his wife, Jo, was peeling peaches as big as

grapefruits, he again talked about the miraculous value of making compost with fresh-cut green kudzu leaves.

Thinking I was hot on the trail of some yet-to-be-discovered plant growth hormone, I enlisted the help of a horticulture graduate student and we made our own batch of kudzu compost. We made an exact replica using comfrey leaves as the green material, too, and submitted samples of the finished products to the best lab in the state for analysis.

If there was anything magic there, it didn't show up in the numbers.

I went back to Wilber's to share this news, and he got quiet and scratched his chin for a minute. "You let it get rained on, didn't you?" he asked, and showed me the sealed canisters of compost he stored in the crawl space under his house. Maybe we did let a little rain in our bins, but I've never been satisfied — until now — that there was some untold magic in Wilber's method.

Having read this book, I know there's no magic. Just a well thought out system that gives tomato plants more than they could ever want, and makes it possible for them to reach their full potential.

Certainly Wilber's compost is a cornerstone. It gets its 160 degree heat from green material and manure, and is never allowed to be leached by rain. Research has shown that only a quarter inch of this kind of compost mixed into soil can increase yields of several vegetables, so it's no surprise that using it to enrich both the planting hole and the surrounding soil results in over-achieving tomatoes.

Surrounding soil — now there's an angle that never fell into place until I hit page 57. Every fall when I pull up my tomato plants, I'm surprised at

the lateral growth of their thick primary roots. Wilber's layers of compost, alfalfa meal, and mulch that stretch out four feet on either side of his tomato plants must be every bit as important as the compost if you want to grow world-record tomatoes.

Valuable pruning and watering details are here, too, along with a new way of looking at seeds. I now see that my mistake was thinking that Wilber's phenomenal success with tomatoes hinged on one or two things that he did especially well. But growing world-record tomatoes is much more complex than that. As you will learn in the following pages, growing awesome tomatoes integrates every aspect of gardening that you can imagine. It begins when you sort through the seeds you hold in the palm of your hand. I suspect that the learning never ends.

— *Barbara Pleasant*

Barbara Pleasant is the author of a dozen gardening books. For eight years, she was a contributing editor to Organic Gardening magazine.

Introduction

Plants were growing in the world for centuries without our modern methods. It's hard not to believe that before the chemical era, nature did not know how to produce efficiently and that therefore mankind stands in danger of hunger sweeping the world unless factory-in-the-field systems preside over food production. The methods used were natural — that is, nature did not use toxic sprays, salt fertilizers, cultivate or involve other abusive procedures that our industrial mentality has loaded onto the land. In fact, the prospect of feeding a hungry world has to be answered with smaller, not larger

farms. The tomato provides its answer, and the lessons learned can be extrapolated to include other vegetables, field crops and fruit trees.

For now it is enough to point out that there are many ways to grow tomatoes. There are labor-intensive methods such as deep-bed preparation, raised beds, mounds, ditches, container gardens, etc. All of these have their usefulness. In some areas there is not much choice, nature having dictated the resources and the likely outcome. Nature uses a system which, in my opinion, is different from those mentioned above.

Most plants have one purpose, which is to produce seed. With this in mind, I will outline a system of growing tomatoes which has produced plants of medium to large tomatoes weighing an average of 342 pounds per plant as shown in the 1987 *Guinness Book of Records*.

Also included are suggestions for container growing tomatoes in the yard, garden or rooftop for those who would like to grow tomatoes in the city.

As a result of several years of running a consulting business for gardeners, I now divide gardeners into three groups. Group One wants to make shortcuts. They don't want to put in too much effort; everything else comes first in their lives. The plants get watered when it rains.

Group Two will not dig a big hole to set the plant if there is another way. They will water plants occasionally, and generally give plants enough care to grow some tomatoes.

Group Three wants to be the best in the business. These gardeners will lay out the tomato rows in the freshly worked soil of the rye and vetch plots they worked under in the early spring. The distance to set the plants apart in the row is determined by the staking system.

This is an entire system. Some portions are simply good gardening. Other techniques fly in the face of conventional wisdom. It is beyond the scope of this book to delve into the science behind my system. What you need to know, and I can assure you, is that it works. While you will experience a modicum of success if you pick and choose tricks or methods from this book, if you earnestly attempt to implement the entire system, from composting to bed preparation, from seed selection to setting, from pruning to irrigation . . . you will produce tons of tomatoes.

And best of all, you'll be doing it naturally.

1

My Story

My parents owned a small farm, and like most farm boys I helped with the work. I usually got the job of hoeing. We gardened in the usual way, applying a little store-bought fertilizer along with manure from the farm animals. I noticed where manure was applied, the plants looked greener and had more growth.

I left the country and went to the big city for several years. One year on vacation I visited Sequoia National Park where I saw a huge tree called “General Sherman.” I sat on a nearby bench and wondered how a tree could grow that large.

Apparently all that was needed was air, rain, snow, fallen leaves, weeds, grass, limbs, dead animals, no cultivation, etc.

This day was a turning point in my life. Built into my personality is the desire to be the best at the things I do. I wanted to unlock the secrets of how things grow in nature. I figured the quickest way to discover these secrets was by growing vegetables. And tomatoes are my favorite vegetable.

Over the next few years my time was spent on many things. The desire to start growing tomatoes was always pressing. I read books and articles on organic growing that showed me what others were doing. The day finally arrived when I had the land and water to start my tomato plant called “General Sherman.” My plan was to duplicate nature as much as possible. I had noticed in the national park that the mulch or surface area was only a few inches deep and comprised decomposing humus-like substance. Soil samples were taken on my land to determine what supplements were needed. Two plots were made.

On the first plot the soil test recommendation was for N, P, and K. This was added via synthetic fertilizer, plus dolomite. On the second plot I used a homemade compost of kudzu, hay, manure, wood ashes, colloidal clay, and dolomite. A mulch of

wheat straw was added to duplicate the shading effect of leaves in the forest on both plot one and plot two.

Plot one grew a little faster at first, but the plants didn't have a dark green color or the stalk diameter to hold up under the heavy weight of tomatoes. Many other comparisons were made in other tests with similar results.

This experience committed me to organic growing. The research set the pace for growing the plant I named "General Sherman." My initial goal was to achieve ten feet of vertical growth with tomatoes from ground level all the way to the top.

One day in mid-summer the tomato plant reached ten feet and a local newspaper took pictures. This was followed by radio and television interviews as other plants I grew set world records.

In this book are twenty years of research and experience that I now want to share with you. It is my sincere wish that some reader of this book will set the next world record.

My Life

I am a hands-on person as well as a child of the farm. Up front I'll admit it took me five years to perfect my gardening technique. In the process I

came to love the tomato, even though I'll never live long enough to learn all there is to know about that beloved plant and its fruit. Five years may seem to be a long time to spend in pursuit of a world-record tomato plant, but it was a price I paid gladly and happily. The fact is, I was not attempting any record whatsoever at the time; I was trying simply to improve my technique.

People who have excelled in their field and have earned the title "best," whether in athletics, business or agriculture, generally have certain common characteristics. Most people will agree that these world-record characteristics are not developed overnight — not even in a few years — but are behaviors developed from childhood which have become part of one's lifestyle.

I was born in Baldwin City, Kansas on December 24, 1914. When I was very young, my father was struck by lightning and was left weak and almost blind. After that time, his work as a farmer and rancher was very limited. My mother worked with redoubled effort to keep the family together. I was the third of four children, having an older brother and sister and a younger brother. My family moved to Berryville, Arkansas when I was eight years old. We lived on a farm there until I finished high school.

Long before I took to growing tomatoes, I was helping the family earn its way. My first job was in grade school, hoeing grape rows for twenty-five cents a day. In the springtime I cut sassafras trees and sold the bark. On one occasion, I made big money peddling fish on the streets of Berryville. I made a deal with a man who had a Model T. I talked him into supplying the vehicle while I supplied the fish. We split the profits. I fished all day and all night with a trotline and had a big catch. I sold the entire catch. The county judge purchased the biggest fish; my price was fifty cents. The judge hardly hesitated and then gave me a dollar bill saying, "Keep the change." At that moment I thought I was rich. It was the first dollar bill I had ever owned. I was nine or ten at the time.

At one time there was a man in town buying bullfrogs. I borrowed a boat and went into business with my brother. My brother paddled while I leaned over the side to grab the frogs by hand, as the customer wanted live frogs. I learned a great deal about nature in the process, including the pecking order in the natural order of things. I was never oblivious to the difference between snakes and frogs, and I never grabbed a snake by mistake, but I was known to take a frog away from a snake. Frogs were worth twenty-five cents each then,

which was big money compared to hoeing row crops.

During the winter my brother and I killed rabbits and sent them to Springfield, Missouri. I carried the .22 repeating rifle; my brother walked shotgun. If the .22 failed to bring down the rabbit, the shotgun swung into action. Our biggest kill was sixty in one day. We put the harvest in cold storage in town until we got enough to ship. Our biggest shipment was 1,500. Usually the rabbits were sold from barrels in Chicago and other northern cities. This rabbit harvest kept a lot of people from going hungry during those hard times.

An old Indian friend taught me to trap. At the age of twelve I started making money with the traps. Withal, it was this activity that taught me a love of nature and all its ramifications, and I have never forgotten even the smallest lesson. I learned the habits of animals and felt privileged to out-smart one. Animals have more sense than people. Out there — in nature — that's real civilization. I'm not sure what we live in.

By the time I was in high school, I was making more money in two months by trapping than the family farm made all year. All of my business projects had to be done on the side; school and chores on the farm came first. I had to get up at four in

the morning to do the chores before walking two miles to school.

During those years I realized that we all have the same amount of time — twenty-four hours a day. People always find the time to have fun and all these things were fun to me. I saw no point in playing marbles like other kids when I could do something that was more fun and beneficial as well. I'll admit I hated hoeing, my main chore at home. That's why I became interested in mulching in later years. Call it "a lazy man's gardening" if you wish. Here it is enough to know that all my business ventures produced substantial income for the family. I was determined that my family would not have to suffer because of my father's disability.

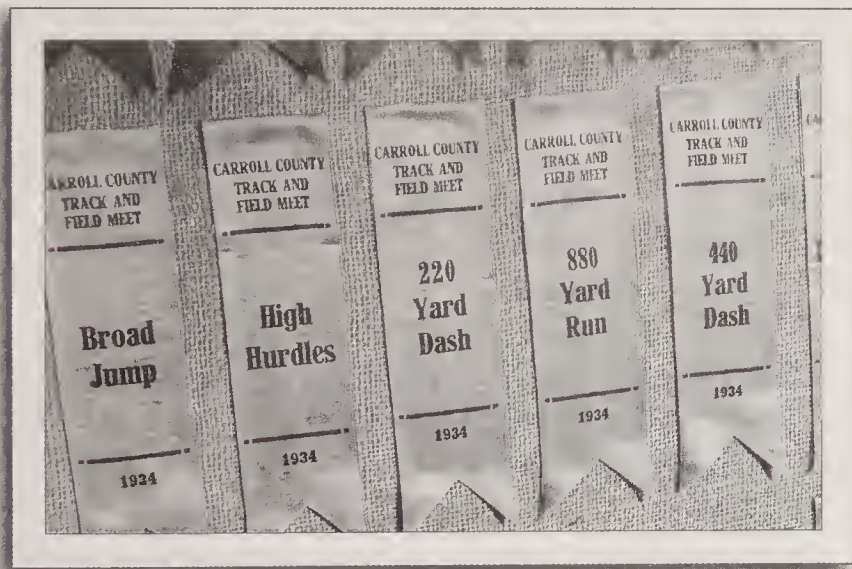
During the Great Depression — which struck while I was still in high school — it was not uncommon to hear of families going hungry or having to split up. I always saw to it that there was food on the table. I never once thought in terms of keeping the money for myself.

Most world champions are competitive from an early age. I always loved a good contest with my brothers. I would get mad at myself if I did not win. When I couldn't find someone with whom to compete, I would simply compete with myself. I recall a time when my older brother and I ran a race to see

who could finish cutting the corn first. Two 200-yard rows were involved. I underestimated my brother and did not give it all I had. My brother beat me by two stalks. I still consider this a major milestone in my life. In that contest I learned a great lesson: never do anything second best.

I don't know why, but I have always enjoyed beating my own record. Once, when I was a small boy, I went into a pasture to cut off persimmon sprouts. No one told me to do it; I just knew it had to be done. I started racing with myself to see how fast it could be done. I did not realize that my uncle was watching. My uncle praised me for being such a hard worker, connecting my hard work with my German heritage. From that moment on the uncle referred to me as a "hard-working German." I guess I worked even harder to live up to that name.

I take pride in the stack of ribbons earned during my childhood and in high school. I received my first grand prize when I was ten or eleven years old. It was for raising the champion of soybeans in a countywide tournament. I accomplished the feat by gathering cow chips in a pasture and sailing them into position as fertilizer. I also won blue ribbons for lambs and hogs, but most of my ribbons were earned in track and field events.



Though I won many ribbons as a boy, my favorite events were track and field.

Academically, the record reveals straight-A course work. I do remember a B in conduct “for pulling a girl’s hair.” I managed to receive several scholarships to Arkansas universities and colleges when my high school days were over. I couldn’t use them because the Depression had its grip on the country and I had to keep bread on the table. Parenthetically, I have to add a record that dovetails with my later years’ tomato records because of its *stick-to-it-iveness*. I threw the longest ball and pitched six consecutive strikeouts in baseball. I

gave up a chance to try out with the St. Louis Cardinals because I was needed at home as a provider.

There was one game we played as children that helped me become a hawk-eye marksman, a good pitcher, and a quarterback. The favorite Sunday afternoon pastime for boys was knocking squirrels out of trees with unshelled walnuts. The squirrels had to be hit hard enough to be stunned so that when they hit the ground they could not run off. Boys who couldn’t handle the job were considered sissies. My family seldom missed having fried squirrel for supper on Sunday nights.

My mother became ill with cancer while I was still in high school. After graduation, we moved to south Texas so that my mother could be near her family. She died a few months later. My oldest brother was living in Chicago. My other brother and sister and I followed the harvest, starting the spring after mother’s death. We harvested wheat, flax and potatoes, working from Texas up to the Canadian border.

It was the first time I left home, and it provided me with a chance to study people. I learned more about people’s egos than I cared to know. Once, during a work crew bragging session, several migrant workers lionized themselves for their



Home sweet home, Smith Lake in Crane Hill, Alabama.

shooting ability. I watched them shoot until they came up with a winner. Someone asked, "Aren't you going to join in?" I went into the bunkhouse and fetched my .22 and a fender washer with tape over the hole. I threw it up in the air and shot a hole through the center of the tape. I became an immediate celebrity in the camp.

When the harvest was over, I landed in Chicago where I worked various jobs while attending night school. I spent the World War II years in industrial management training. I volunteered for active service, but was turned down because the job I was doing was considered more valuable to the country at the time. After the war I continued in management with a large corporation. I married, but my wife passed away a few years later. Her last years were spent as an invalid requiring my care night and day.

I married my present wife, Jo, in 1969. Jo came aboard like a breath of fresh air and was possessed of a zeal for life. If anything, she became known for the persistence I prized. Alas, she did not take to gardening or tomato growing, but she never failed to encourage the enterprise.

As expressed above, I gained much of my insight by observing nature and seeing what I looked at. I added to the above many hours of study

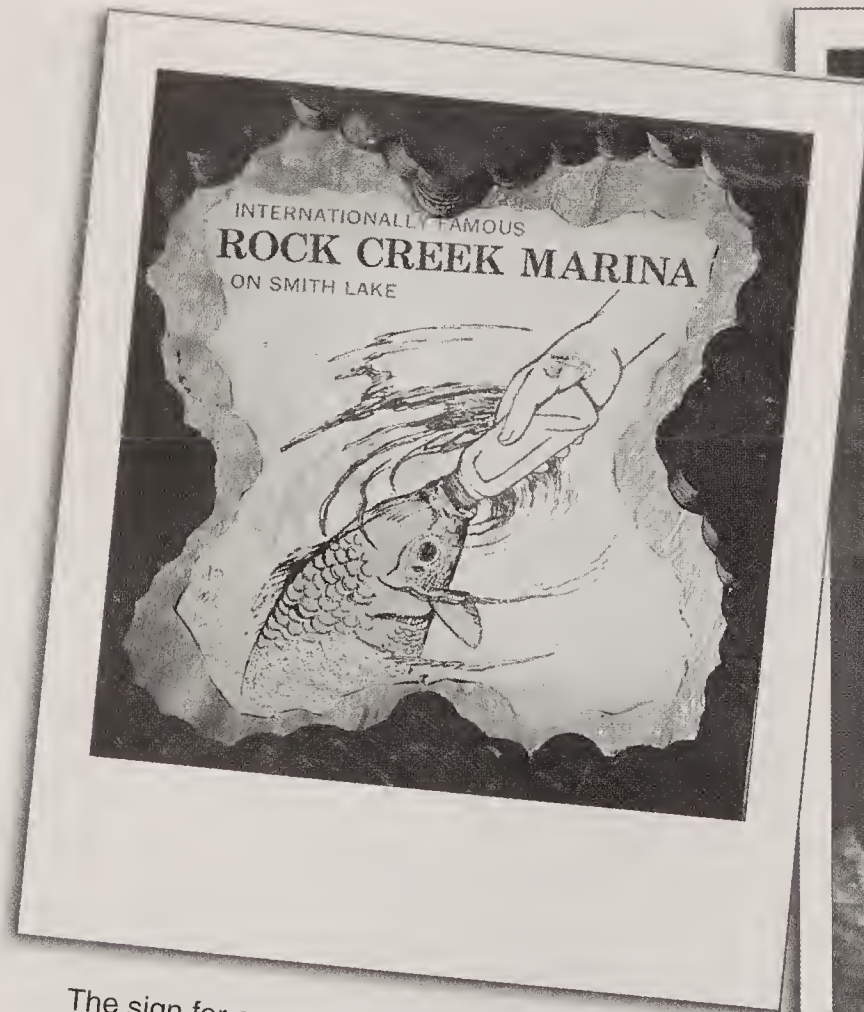
of the literature then emerging in the organic movement. I literally chomped at the bit to follow the “hands-on trail,” but an inner sense of values told me that the North was not the ideal clime for record setting. I found some land by Smith Lake in Crane Hill, Alabama, purchased it, and moved to the location where I still reside.

I built a marina to sustain us financially. Jo enjoyed the work at the marina. In time carp would arrive to suck crackers off the surface of the water. Jo improved on the spectacle by teaching the fish to suck from a baby’s bottle with the nipple hole enlarged, and containing cracker crumbs in water as their milk. Our little marina became famous when thirty-pound carp entertained customers by sucking crackers from bottles. Over the years people came to these backwoods to see the “civilized” fish. News of Jo’s fish even traveled behind the Iron Curtain in the 1970s.

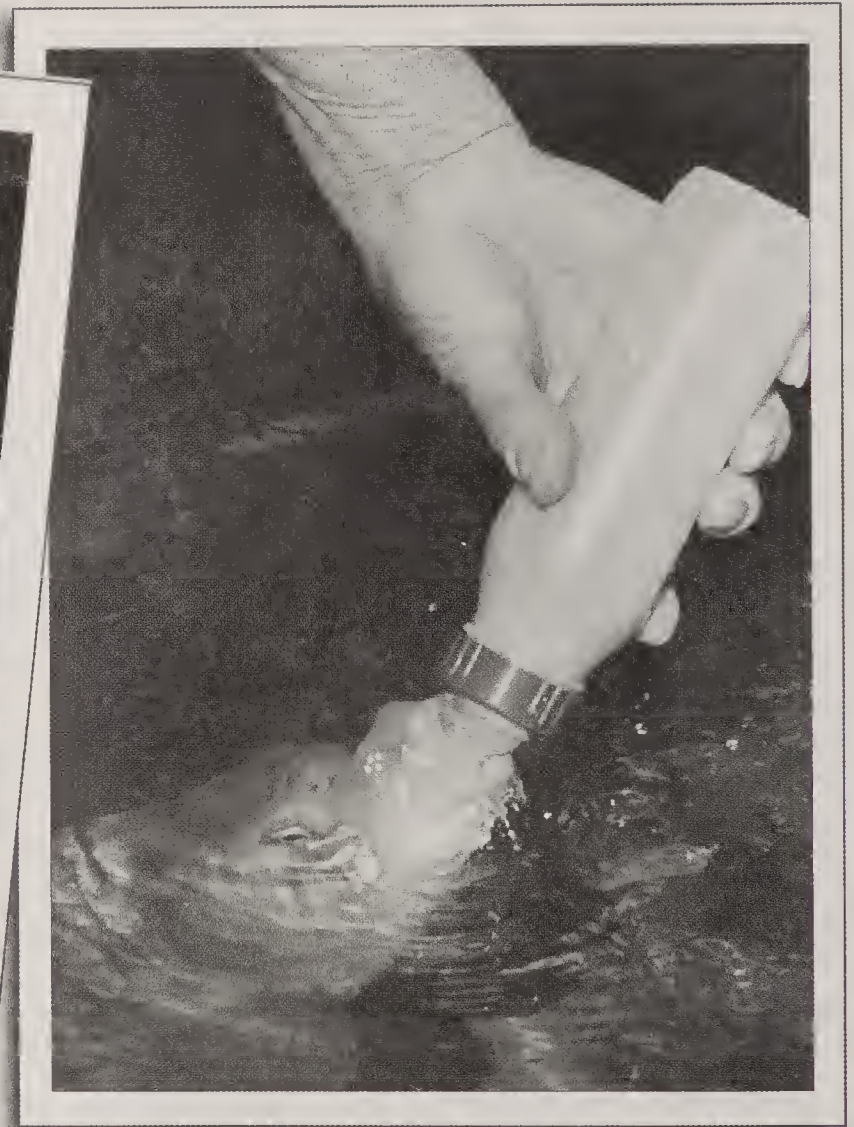
Jo also taught wild birds to eat out of her hands. This turned out to be very valuable to the gardening enterprise. The redbirds moved into the area and policed worms off the tomato plants. It took me almost five years to get the tomato garden into a prize pasture, a worthy closing to what I considered a venturesome lifetime. I guess I was really competing with myself. It took a friend many



World record tomatoes — in 1987 I grew 1,368 pounds from four plants.



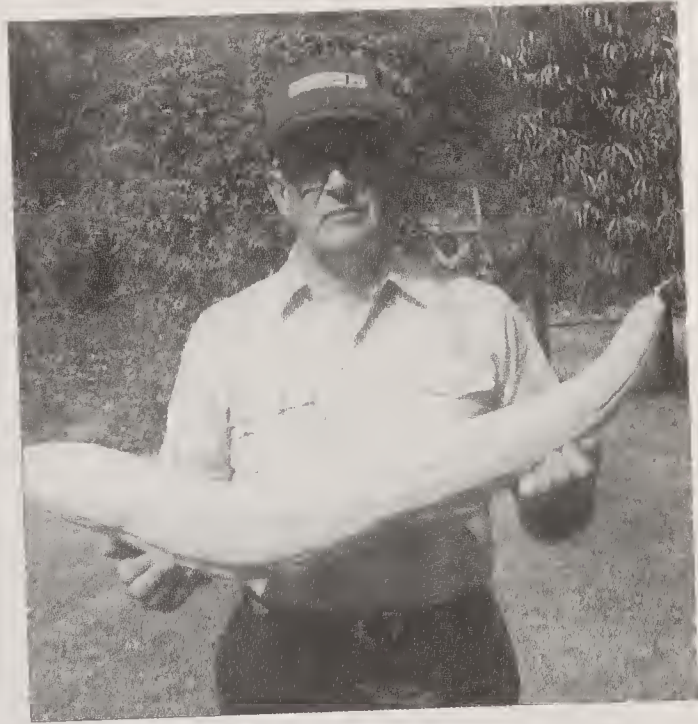
The sign for our marina featured Jo's famous bottle-fed carp.



Jo bottle feeding one of our 30+-pound carp.



This birdhouse Martin gourd grew 62-1/2 inches around from a pile of compost leftovers. I threw a wheelbarrow of soil over a compost pile, leveled it and planted a few seeds which I later thinned to two plants.



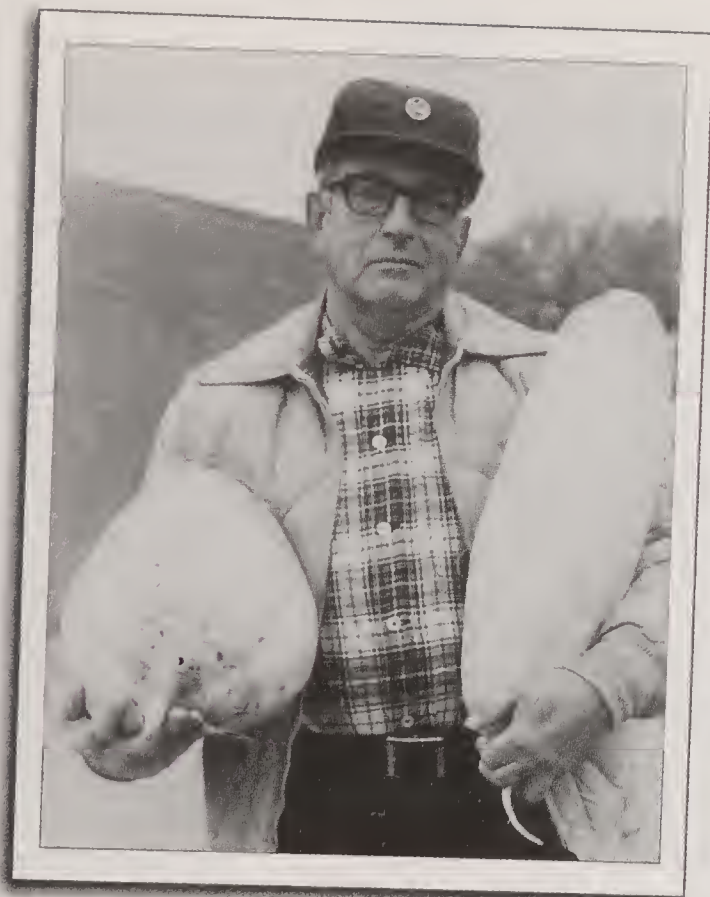
Here I am with an 18-pound cucumber grown by working 1-2 inches of compost into a bed 4-feet wide. Seeds were planted after last frost in the center of prepared bed and plants were later thinned to about one every 4 feet. Straw mulch was used on both sides of cucumber rows.



Using organic methods, I grew a 6-foot, 2-inch pecan tree from seed in one season. Pecans grow slowly. To prevent growth stoppage from stress, I worked out a system of mulch, compost, watering and foliar spraying to produce this result.



One season was all I needed to grow a 14-foot wild persimmon from seed. These plants were used for grafting buds for Japanese persimmons and we were all surprised at budding time. I used compost as usual plus a spray-on fish product.



An 18-pound, 2-ounce radish, at left, and another that came in a mere 12-3/4 pounds, were grown by the same system that I use for my world-record tomatoes. I'm always asked how they taste, with the assumption being that something so big is tough or off-flavor. They are tender, sweet and wonderful!

months to prod me into sending pictures and records to the *Guinness Book of Records*. Three of my entries ended up being records in the book. Several other crops were records also, but I didn't submitted them in time. My "hands-on" accomplishments can be stated in outline form . . .

1. Tomato plants yielding 1,368 pounds of tomatoes from four plants. A picture of the plants appeared on the cover of the hardcover edition of the 1987 *Guinness Book of Records* for the most pounds of tomatoes on a plant up to that time. The average was 342 pounds per plant.

2. A cherry tomato plant that made it into the *Guinness Book of Records* for the tallest tomato plant grown. It was twenty-eight feet, seven-inches tall. This record still stands.

3. Tallest okra up to that time in *Guinness Book of Records*, seventeen feet, six-and-one-quarter-inches.

4. An eighteen-pound cucumber.

5. A half-pound plum.

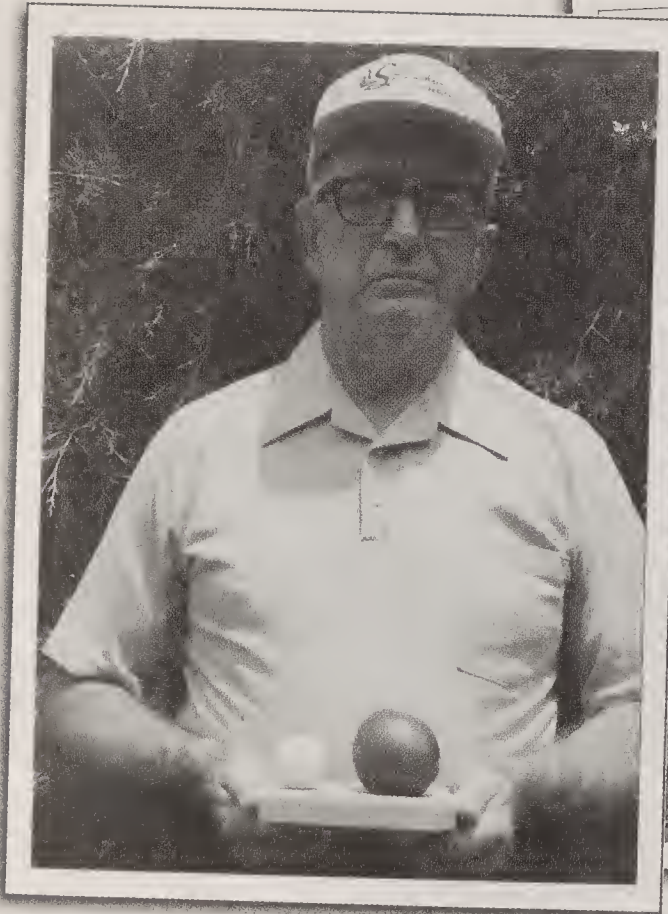
6. Fifteen-foot sweet corn.

7. A sixty-two-and-one-half-inch circumference birdhouse Martin gourd.

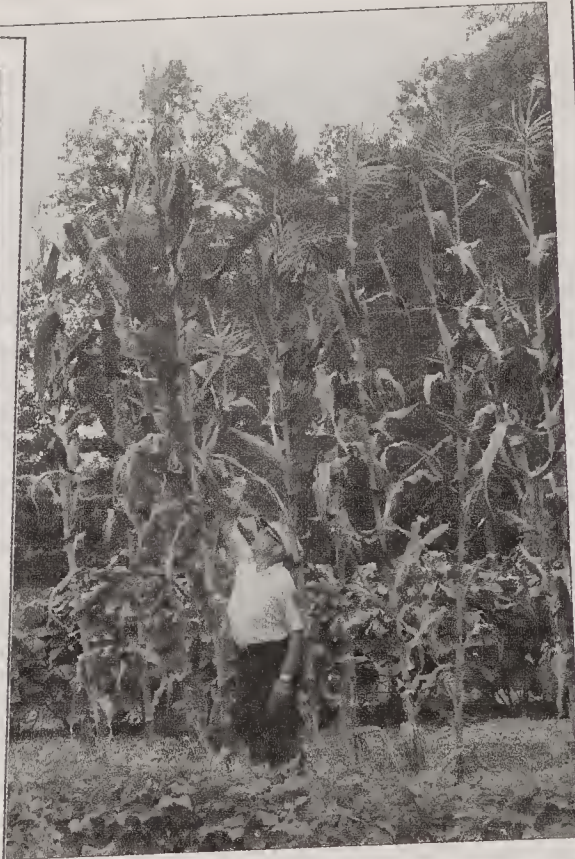
8. An eighteen-and-one-fifth-ounce radish.

9. A three-inch peanut.

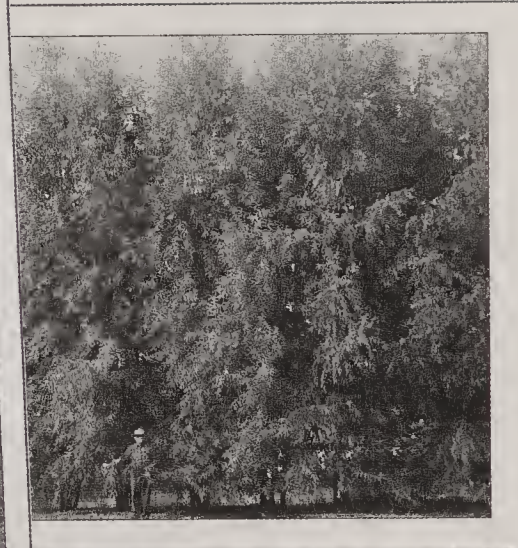
10. A twelve-inch diameter hibiscus.



Half-pound plums are easy to grow with my gardening methods. This plum came from an Ozark Premier tree; a tree I was testing for resistance to late blossom freezing on organically grown trees. This tree averaged between two to three bushels a year. Except in early spring, I used a heavy straw mulch year round.



When the corn gets 15-feet high, it's hard to pick!



My hybrid willows grew 42+ feet in two years; compost and mulch did the job in this picture.



Hibiscus blooms a foot wide are not unusual at all when plants are fed my compost.

11. A six-foot, two-inch pecan tree from seed in one year.

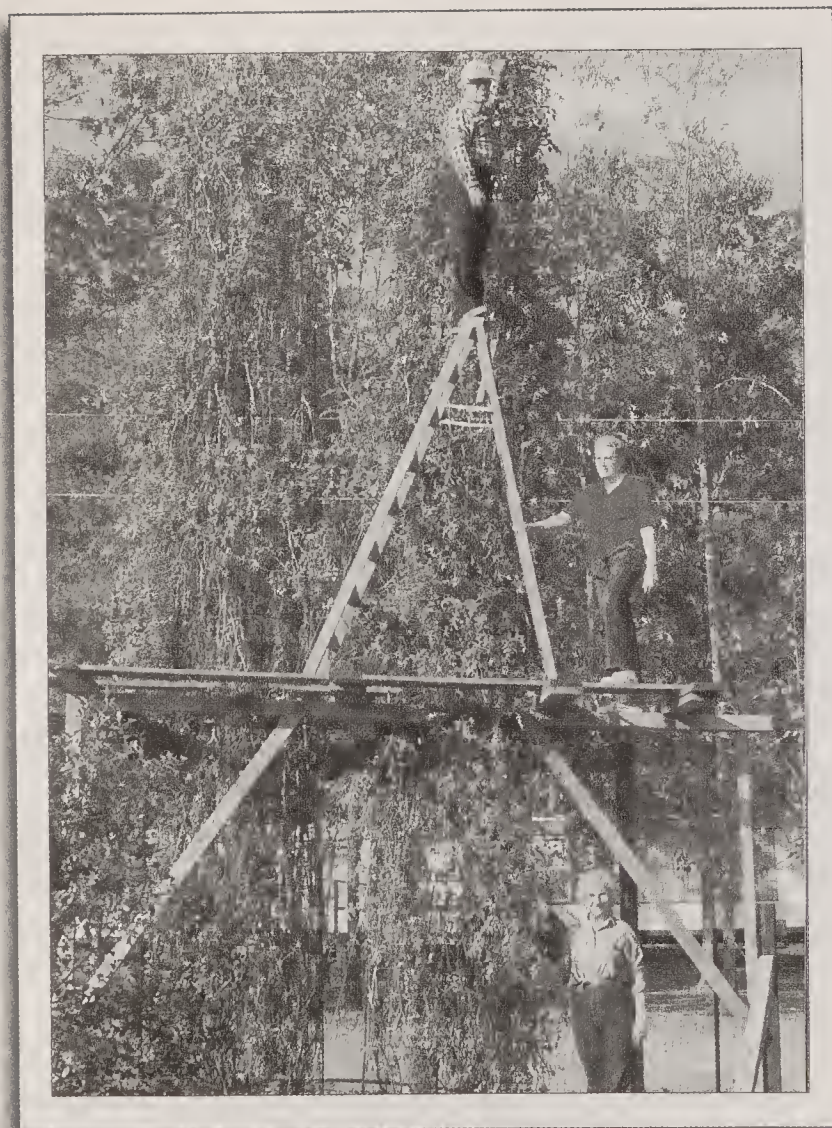
12. A fourteen-foot tall wild persimmon from seed in one year.

13. A hybrid willow of forty-two-plus feet in two years.

Guinness doesn't publish every record in every edition, but at least one of my records still stands.

I could write volumes, but more words will not grow a plant. It takes "hands-on" activity. That is the foundation of this little book. The words and paragraphs are here for reference and as a prompter's note on what to do next and how to do it. The techniques detailed in the pages that follow are simple and inexpensive. A small plot of land can provide food for many families.

A figure put out by the universities projects the possible production at thirty pounds per plant. This is based on so-called "conventional" methods used in U.S. agriculture. But my plants produce 342 pounds each. That's over ten times the maximum. Best of all, I accomplish this feat without the use of salt fertilizers and toxic chemicals. This translates into a finding USDA and the university system dare not face, namely the fact that farmers are using ten times too much land at probably ten



You can grow tomatoes to the sky with my methods. This particular pair of plants hit the 27-foot mark. Family friend Sara Ruehl is shown helping to steady the ladder.

times too much expense to produce food of marginal quality.

I know most people can't change. The old ideas die only when the last of their advocates die, and that will likely be the course of events for the agriculture that has failed. But there is always the innovator, the pioneer, the standard bearer for progress. The organic grower is such a person.

I can testify that by and large the university professors will not listen. My methods compete with synthetic fertilizers and there is too much money tied up in the chemical companies for America to change unless we have to.

I admit I have had more success educating and working with Europeans than Americans. We can only speculate on how far improvements in the environment would go if tried. The reduction of cancer rates and the lowering of degenerative diseases would have to be astounding, as would be the general improvement of the quality of American life. Not to mention that it is infinitely more satisfying to work with nature — to coax her into releasing her bounty — than to sledge-hammer it out of her with dangerous synthetic chemicals.



This cherry tomato plant — it hit 28' 7"! — was the one that brought me a world record still standing after 13 years.



I caught this 40-lb. catfish using a net and kept him as a pet in a tank until he visited our dinner table. One visitor accused me of feeding him my compost.

2

About Tomatoes

In the United States more gardeners grow tomatoes than any other vegetable. Some say ninety-five percent of our gardeners grow tomatoes. Most anywhere you find food, tomatoes will be found in some form.

Tomatoes will grow in many types of soil, but they prefer well-drained loams (a crumbly mix of sand, silt, and clay). They are easy to grow in a flower pot in the window or as a tree-like plant twenty-eight-feet or more tall in a garden.

Growing tomatoes can be done in the yard or most any place with plenty of sunshine. Be aware



I choose to grow only indeterminate varieties; if provided adequate nutrition, their yields can be astounding.



By contrast, determinate tomatoes have a built-in governor that shuts down their growth. The vine terminates in a flower cluster, and there is only moderate vine growth after the fruit is formed.

that tomatoes are easily killed by frost and early plants should be covered for protection.

Tomatoes are quite hardy and can be planted in leftover spaces like corners, fencerows, low-growing flower beds, early spring flower beds, on trellises beside buildings, or planted in the center of a bale of rotted hay or straw.

The two types of tomato classifications for many gardeners are the determinate and indeterminate groups. Determinate are the lower growers. They have less production since the stem ends at the flower cluster. Seldom does this group require pruning or major caging. Indeterminate vines do not end at the flower cluster but keep on growing.

It is necessary to consider varieties based on need or use. For varieties that do best in your area it may be helpful to ask an experienced neighbor or your local extension service who may also have helpful literature.

In most areas where I work, disease-resistant varieties like Better Boy VFN are used for climbing. The 342-pound average plant I had in the *Guinness Book of Records* was a Better Boy VFN. It sure climbed.

A good supply of nitrogen, phosphorus, and potassium is needed for tomato production. Some good sources are green crops worked into the soil,

manure compost, rock minerals, and other nutrients as needed, according to soil tests. A word of warning on chicken manure, use it sparingly as the nitrogen will make your plants “leggy” if too much is used.

Failure to fertilize properly serves up weeds, and weeds attract the insects and fungal crop destroyers that ultimately obliterate crop plants. It all starts with a failure to understand stewardship.

The Magnificent Tomato

Tomatoes seem to have originated in Central or South America. The name itself comes from an Aztec word, Zitomate. The plant was grown by Indians in Mexico and Peru long before the time of Columbus. It was taken from Peru to Italy, where it met with favor. There it was called “golden apple” and “love apple,” but by 1695 the name “tomato” had come into general use. When the cultivation of the plant first started in northern Europe, the fruit was considered poisonous and was grown more for curiosity and ornament than for use. The English herbalist Gerard wrote in 1595 that “love apples” were eaten abroad, prepared and boiled with pepper, salt, and oil and also as a sauce, but he reported that they “yield very little nourishment to the bodie, and the same naught and corrupt.”

The first written mention of tomatoes in the United States was made by Thomas Jefferson in 1781, but they were not grown commonly for use even then. Some time later, the secretary of the Connecticut Board of Agriculture wrote: “We raised our first tomatoes about 1832 as a curiosity, made no use of them, though we had heard that the French ate them. They were called love apples.” By about 1835 culinary use had become more general, although many people still considered them poisonous.

This attitude is particularly interesting in view of the enormous popularity that tomatoes enjoy today.

— Ann Roe Robbins, *25 Vegetables Anyone Can Grow*

3

Composting

Compost is the black gold of the organic garden. Compost is the promise that there will be life after death.

Compost is simply a process where dead, decayed organic material becomes humus and wonderful nutrients for the new plants. This composting process is not something man-made. It has been going on since the beginning of time, as leaves, trees and animals fall to the ground and decompose. This is nature's way of renewing itself. We use nature's technique when we compost, but I might add that we have never been able to dupli-



Rich compost is an absolute necessity in any world-record garden.

cate nature's success rate. Our process heats up causing a loss in nitrogen. The nitrogen is not lost in the natural process on the forest floor.

Farmers in the past — and even today in most third-world countries — use natural fertilizers. Only in recent years has man attempted to “improve” on Mother Nature by using chemical fertilizers and consequently more and more insecticides and poisons because the balance of nature has been upset. When will we ever learn to work in harmony with nature?



Compost should hold together, but not drip water, when you give it a squeeze test.

Many people who came to my garden to see my tall tomatoes said that I was blessed. Some said that an “unseen hand” had a part in all this. Over the years I have thought on these words. I believe that growing food the natural way is God’s way. If, in fact, God has had His hand of blessing upon my work, it is to show the world that this way is best. This is why I feel compelled to write this book. I know that God’s first command to mankind was to be fruitful and multiply and replenish the Earth and to take dominion over the living things (Genesis 1:28). In Psalms 8:6 it says that God made man to have dominion over the works of His hands. Man was given a grave responsibility to care for this Earth, and to make it a safe place to live. From the time of Adam’s first sin, man has failed in his responsibility. The use of compost is just one more step in the right direction of returning to nature’s way.

Some farmers will argue that using compost is too costly and time consuming. More time may be needed at first to transform a chemical-laden field of dirt into a lush garden, but in the long run, much less time is spent. People who visited my garden were amazed that there were no weeds and not even a spot that had to be cultivated. One local farmer said, “My father always told me that a good

garden spot will always have weeds. You have defied my father!”

Over time, composting is far less costly than buying chemical fertilizers. The ingredients for compost are simply leftover wastes and substances that nature provides free of charge. Large-scale producers may have to buy animal manure if it is not available on their farm. The manure is used to heat up the loads of vegetable wastes a large operation is bound to have. In most areas animal growers are happy to share their animal manure. I have gotten truckloads of manure from dairy farmers in our area. Once a large amount of compost is made, it will last a good while with proper storage. I am still using compost that I made two years ago.

Compost is not only a fertilizer for your plants, it is also a soil conditioner providing a healthy environment for the worms and beneficial microorganisms in your soil. The health of a farmer's garden is a reflection of the health of his soil. Without the action of the microorganisms, plants are unable to utilize the nutrients that are present in the soil. Compost is high in humus and has great water-holding capacity. Humus is also sponge-like and prevents packing around the plant roots.

When organic matter is piled up, the microorganisms go to work producing heat and transform-

ing the smelly manure and decaying matter into rich dark humus. There are two types of bacterial action that take place: aerobic, which means *with air*, is the most common type of composting. It requires no special containers and can be made on the ground in heaps, although some gardeners prefer bins with holes to allow the needed air inside; anaerobic which means *without air* and must be produced in an airtight container or pit. The advantage of this method is that only ten percent of the nitrogen is lost in the process whereas up to forty percent is lost in the open aerobic method. Not only the nitrogen, but more nutrients in general are preserved with the anaerobic method.

Composting is relatively easy, but in order to assure that all the diseases and seeds are killed, a proper temperature must be reached. There is argument about what is the correct temperature, but I prefer 160 degrees. Many farmers fail to kill pathogens and seeds in their compost and end up paying for it later. The heat comes from the correct mix of ingredients. Green or dry matter, in the form of hay, weeds, grass clippings or kitchen waste, is mixed with fresh manure. Most books recommend a one-to-three or a one-to-four ratio of manure to green or dry matter.

Much-Maligned Kudzu

Kudzu is a leguminous vine imported to the United States from Japan in the 1930s as a remedy for erosion. It was so successful that today it literally blankets much of the South.

As a plant, Kudzu is amazing. It is never found in continuously grazed pastures as cows, horses, goats, sheep, pigs, groundhogs and rabbits — and especially goats — love it. It is about 26% protein and is rich in minerals.

In the field, it has been known to reclaim the harshest clay soils, turning them into rich, crumbly, brown soil. It is known to carry nitrogen and oxygen down into the soil and bring the soil's lime complex up. The result is a soil that breathes.

As a compost input, kudzu is superb. If you are not blessed to live in Kudzu country, take heart. Other legumes have performed equally well for me.

Considered a noxious weed in the United States, it is a prized medicinal in Asia. A root extract called kuzu is highly prized in cooking and is said to cure alcoholism.



The joke in the Deep South goes if you stand still too long the kudzu will grow over you and nobody will find you until the first good freeze. Here the plant is climbing the guy wires of a power-line pole.



Some of my kudzu compost stored in wire-bins and covered.

Most of my knowledge on composting came from others. In the beginning I did a lot of reading on organic gardening and composting. I simply adopted a method that worked best for me. I have no secret formula for compost, even though many people have accused me of having one.

In other parts of this book I have made remarks unfavorable toward the use of chicken manure. The high levels of nitrogen applied by the average gardener in manure from the chicken

house or purchased pre-dried in bags used improperly will reduce yields. Some gardeners will say that they have used chicken manure all their lives with good results. This may be all that Group One gardeners may need to grow satisfactory tomatoes, but Group Two and Group Three gardeners can increase their yields five to ten or more times their current yields by using other manures to generate heat. Again, I prefer to see a short-term temperature of 160 degrees. This kills most diseases and weed seed for a weed-free mulched garden. The best way I know of to keep weeds out of the garden is not to let one go to seed. For more information on composting in general, purchase a good book on the subject.

In this book, I focus on the composting method I like best. This compost was used for the most part on four plants that produced 1,368 pounds of tomatoes.

Most beginners, including myself, fail on the first aerobic compost pile. The common reason is that the compost never gets hot. I think some of the skunks took a long vacation because mine was soggy.

The ingredients I used are shredded green kudzu, hay consisting of kudzu and sudex coarsely



For a ton or less of compost, this is the only tool you'll need.

ground, manure, soil, granite dust or hardwood ashes, and colloidal clay.

Make two cages. I use four-foot-wide, one- by two-inch mesh called dog wire in many areas. A cage diameter of four to six feet works best for mixing and turning material.

Place cages in well-drained areas free of trees or brush. Place a three-inch layer of dry hay in the bottom of the cage. Evenly water the top of the pile. Watering is a problem only practice will solve. The rule of thumb is to keep the heap damp but not wet enough to release water when squeezed. Dig into the layers to see how you are doing.

Next add two inches of cow manure or one inch of chicken manure. Then add one quarter inch of good garden soil with a light sprinkling of colloidal clay and granite dust or hardwood ashes. Repeat the above until the top is rounded above the cage for drainage. Never let it rain on uncovered compost. Be sure to level each layer by checking the wire spacing for height around the cage.

Many areas of our great country do not have kudzu. For those western areas, alfalfa is all that you need. In northern and eastern areas, soybeans work great. A nitrogen-fixing plant is the ideal input material. This is one key to my success.

On the third day it is ready to be turned. Set the second cage alongside of the first cage.

The heap is turned with a pitchfork. All turning is done by moving the outer part of heap to inside of heap. This gives a more uniform and faster decaying compost, plus more assurance of disease and weed seed control with small hand-turned piles. If there are any whitish areas when turning, that means the heap is too dry. Add more water during the turning process. Should the heap be too wet add more dry matter.

Turn the heap on the second day if you see any problems. Otherwise, turn every third day for a total of five times. To keep the heap moist may require a small amount of water each turning.

A strong rotten odor means the heap was soggy too long. It is no longer top-grade compost, try again!

Turn the heap once a week until total cool down (no reheating) when everything is working right.

Anyone handling a ton or less of compost can do the job easily with compost or pitch fork. I like to turn the compost materials from the outside to the inside as often as necessary. I suppose I do mine more often than most people do. When the compost pile heats up, which it will if manure is

present, turning is indicated. I like to have the temperature reach 160 degrees for a day or two and then let it gradually cool down. The more turnings the better. Most of my mixtures require turning every second or third day. I do that for a period of two weeks, and this brings the pile down rapidly. I like to carry mine over for a longer period of time in order to enhance the humic acid content. After my compost is through heating, I put it in a container, keep it moist, and use it the following spring. I don't keep it tightly sealed, just covered.

The outside of the heap in hot weather will dry out. To avoid this, water with a garden hose forcing water to penetrate inside the edge of the heap. Trenching or building a small mound of soil under your cages will prevent the heap from standing in water.

When the compost cools down and does not reheat, store in barrels, garbage cans, etc., watering occasionally to keep it moist. This compost can be stored for up to three years if it is kept moist, not allowed to dry out, and not over-watered (to the point that water stands in the bottom of the container).

I once brought some compost made in this manner to a garden show where it was admired by

Organic Nitrogen

There is still another factor worth our consideration. In composted fertilizers most of the nitrogen is present in the form of a stable organic nitrogen. This nitrogen is slowly but steadily released over a much longer period of time than the readily available ammonium or nitrate. Ammonia and nitrate are easily lost in the groundwater, in rain, or irrigation, as the plant roots do not make use of all of it at once. Only part of the ammonia and nitrate is preserved in the soil, namely that fraction which is absorbed by the natural soil humus or transformed by the microlife in soil.

Only when a soil is dry will no action whatsoever occur. Again, a soil with high organic matter will stay moist longer in a drought than a mineralized soil. Many observations in this direction have been made recently. One frequent occurrence is that organic matter (and nitrogen) influence the plant growth favorably at times nearer the harvest when other plants have already stopped growing. Excessive available ammonia and nitrates would push a plant to

shoot up, to produce a lot of green mass, but then lag behind at maturing time, i.e., to ripen prematurely. The danger of lodging of grain exists when there is lots of rain and too easily available nitrogen, a danger which never occurs with the organic treatment.

The farmer and gardener have to become familiar with these fundamental differences. Then he will be able to apply the "low grade" organic formula to advantage. Organic nitrogen will be much longer lasting. In fact, in soils with a high organic matter content, the after-effect will still be evident in the second and sometimes even in the third year, so that a new application is not needed every year. If combined with a conserving crop rotation with legumes, this lasting effect can be extended even further.

Due to the entirely different nature and behavior of compost fertilizer in soil, the same results can be obtained with low grade 1, 2 and 3 percent nitrogen as is the case with high-grade 5, 8 and 12 percent nitrogen-mineral concentrates.

— *Ehrenfried E. Pfeiffer, "The Pfeiffer Papers," Acres U.S.A., January 1982*

gardeners who thought it was freshly made when it was really three-years old.

Green Manure

So-called “green manure” crops are plants which provide similar benefits to the soil as animal manures — nitrogen and carbon-rich organic matter. Hairy vetch and rye make the best green manure crop. Both unite forces to flesh out the requirements the professors like to talk about, namely N, P and K. Microbes like carbon. A lot of growers rely on fixes of sugar, molasses and the like to serve up a readily available form of carbon, but I think the green crops fit the appetite of these billions of unpaid workers best of all.

Green crops cause azotobacter to explode into action, delivering more nitrogen than a farmer can afford to buy or pay for. All of this nitrogen is available to plants, not merely a calculation on a bag. That’s why bagged fertilizer runs out of steam long before the season is over.

Azotobacter won’t provide phosphorus, or P, of course. That is easily obtained from bone meal, a minimum use being required. As for potassium, or K, ashes from the hardwood fireplace introduced into the compost pile do the job. Nitrogen, however,

is usually the key limiting growth factor. If unavailable in sufficient supply for the plant’s demand, fruit quantity and quality will never meet expectations.

I like to plant rye in the fall, relying on a judgment call as to when the summer’s heat is over. It grows all winter. When spring arrives, I till the green crop into the soil at least thirty days before planting time. It then composts right in the ground.

Obviously, I can’t plant hairy vetch in October if the tomato crop runs into November. For this



I test compost by planting tomatoes in it. In this test, the three plants on the left show severe burning while the three on the right are doing fine. All plants should be as close to the same size as possible at the beginning of testing.

Humus & Compost

Soils low in organic matter and humus, or with poor tilth and structure, cannot be rejuvenated with chemical fertilizers. Predigested organic residues can quickly start improvement of such soils, since they are immediately ready to function, regardless of general soil conditions.

Humus is the main source of fuel and energy to the soil microbial system. Each ton of manure carries 500 pounds or more of organic matter — and 150 pounds or more of net humus. One ton of compost can support up to 600 pounds of microorganisms per acre. This can be multiplied by the number of separate life cycles in each season.

Humus carries fifty-eight percent carbon which is used by microorganisms through fermentation and respiration to convert part of the carbon into higher energy values. Other carbon may also be spent in the oxidation of mineral compounds into simpler and more available forms.

Humus as a concentrate of carbon and energy compounds aids bacteria to survive cold or dry soil conditions or excess water, enables bacteria to carry out antibiotic effects in the soil, aids bacteria in interrelations with plant roots, which is important to a cold, wet or delayed spring seed bed.

— *C.J. Fenzau*, *Eco-Farm: an Acres U.S.A. Primer*

reason the massive tomato crop requires a rotational system. A four- or five-year rotation handles the demands of the super crop. I will defer comment on alternate crops until later in this book.

For now it is enough to say that I like to follow sweet corn with tomatoes because the crop comes off early. Much the same is true of soybeans. Two or three crops will be off in time to plant the green manure crop in fall for incorporation into the soil in spring.

After a year of tomato production, the plot goes into some other type of production.

The general consensus used to be that you couldn't compost with mostly "green stuff." This has to be an error, because compost made with "mostly green stuff" was used on two plants that took the world record. I discovered this, I suppose, because when they tell me something can't be done, I try to find out why. Green stuff will compost if mixed with small amounts of dry material and turned regularly.

"Hoss" Manure

I have never used horse manure simply because this is a "hot" material (too high in nitrogen concentration), the kind we used to furnish the

hotbed. I know you can get the heat out of it, but this is touchy. For my part, I have preferred materials that perform best without too much tweaking. But I do understand the grower has to use what is available.

Chicken Manure

I suppose I give chicken manure a bad rap. The problem is, you can't tell people to compost it because they won't follow judicious directions. Cage layers deliver pure manure, whereas broiler house manure is full of peanut oil, wood chips, and other high-carbon materials. Some of the least-mentioned material has three to seven percent nitrogen. Some of these materials will have been in place for years, some a shorter time. Very few people have the inclination or capability to make a good grade of compost from such resources. A person who makes only a few yards of compost might better leave chicken manure and/or litter alone.

I have heard of the Joe Francis system, but I have never tried it. Francis developed the concept of inoculating the floors of the chicken houses with compost starter. Rototilling and allowing the chickens to scratch, in effect, does the turning. When the birds leave the house, the compost is ready.

I mention this not so much to ratify the procedure, but to restate the need for keeping an open mind. Withal, I still have to suggest that chicken manure or litter is dangerous for the average grower.

It may seem that I am too hard on poultry manure and/or horse manure. In fact, I use chicken manure on trees, especially on hybrid willows. I've had some of them grow just over forty-two feet in two years. I will state a caution here. I never use chicken manure on fruit trees. Once they get stemmy, you've ruined the tree.

The bottom line, really, is that you have to experiment until you find the correct answer for your specific situation.

4

Garden Location

I like to have at least eight hours of full sun on my plants and a southern to southeastern sloping exposure for good drainage. Any area having standing water or puddles invites diseases. Avoid areas with tree roots nearby. The trees will take the water and nutrients away from the plants.

If tree roots are found when preparing the soil, there is a thief in the house. Even if they have not reached the area in which you plan to place your tomatoes, they will. Remember that your tomatoes will be given all this wonderful compost, mulch,

and water. Trees will find a way to steal these nutrients.

I once placed a pile of compost about 15 feet away from a plum tree. The pile was about four feet high and four feet in diameter. Three or four months later when I needed the compost I found a complete mesh of plum roots intertwined all the way to the top of that pile. It is a given that trees will sap your plants. The question is: How much are you willing to deal with? Are the trees around more valuable than the gardening records you are seeking?

I practice strict crop rotation standards. I never grow tomatoes in the same area that I planted the year before. In fact, my research has convinced me that tomatoes need a four-year crop rotation system. This is just another precautionary measure against your worst enemy — disease.

Also, other crops that are from the same family or that share the same disease, like peppers, melons, cucumbers, and squash, should not precede tomatoes in the same spot.

This might sound like it is an impossibility to you, but it is only because you are thinking in conventional terms, a throwback to when you had two or three long rows of tomatoes in order to get enough to can or preserve for the family. Keep in

mind that with my method your crop is going to be up in the air, not along the ground. Your garden spot requirements will be minimal. Three or four plants are going to grow enough tomatoes to feed your family and many more.

Some people will not have control over the next situation, but I have promised myself that I will never have another garden without a source of water for irrigation. A pond, a lake, or a rainwater catchment system is vitally important. Using city water for irrigation will, more than likely, be cost prohibitive as well as cause many other problems that will be discussed later.

Preparation of Soil

A good soil from five-and-one-half to six-and-one-half-inch deep sandy loam through light clay loam is best. The plants pictured in this book were grown in clay loam. Most soils can be structured with compost, mulches, manure, minerals, green manure crops, sand, etc. to grow good tomatoes.

A soil test is part of gardening in general, but unless the soil pH is on the extreme of high or low in acid or alkaline, a soil test is seldom needed by organic growers.

For example, the standard soil test gives the amount of phosphorus in the soil. This information is of little value since the phosphorus may not be available to the plants. The test I prefer tells the *availability* of phosphorus to the plants. If phosphorus is not available, only then do I add natural phosphate substances like colloidal clay, for instance.

Many gardeners visiting my place have been surprised to see a row of alkaline-loving asparagus seven-feet tall growing along a row of acid-loving blueberries six-feet tall in my garden. Compost or organic matter buffers the pH in the growing area.

As mentioned earlier, a four-year rotation works well for my system of growing tomatoes. The first year in the tomato block will be rye and hairy vetch sown in the fall as a so-called “green manure” crop. This green manure is worked into the soil in early spring, four to five weeks before planting time.

Rye has a very large root system which is well-suited to bacterial growth in the decaying process. Rye, along with mulches, seems to be helpful in the battle for nematode control without using drastic chemical methods.

I use a walking-type lawnmower to mow the rye and vetch. After mowing, I use a rototiller to mix the cuttings, our “green manure,” into the soil.

Once my soil is properly prepared and ready for planting, I keep it dry from through the time I set my plants. I use heavy black plastic to cover a large area around my planting site.

This is only necessary if spring rains are heavy in your area and if you desire, like me, to be able to control your planting date. For years I planted my tomatoes on April 9, even if it was raining on that day.

I never touch my soil unless it passes the moisture content test. The way this test is done is to take a handful of soil, squeeze it together, and drop it about four feet from the ground. If it stays balled up, it is too wet to work. The black plastic placed over your soil when it is dry will assure that it will be dry enough to work at planting time.

Space

I like to keep any beans, even soybeans, four or five feet away from my tomato cages — as long as they are not cultivated. Remember, tomato roots will reach out eight to ten feet. Competition isn't the problem, tillage is. For this reason I use the

same mulch system for row crops, relying on a small trench for planting and fine mulching exactly as I use the center square for tomato plants. Once beans are removed from the garden, there is a residue of nitrogen for tomato plant nutrition. And this is the right kind of nitrogen, the kind that doesn't evaporate or cause spindly plants — natural nitrogen, not synthetic.

Wildlife

Wildlife assaults on the garden cause many gardeners to swear a blue streak, usually to no avail. I think the correct answer is to deal with the problem up front.

I simply fence out the garden predators using one-by-two-inch mesh with a smaller mesh up to about eighteen inches in height. A six-foot fence will keep out deer even though deer are quite capable of jumping such a fence. It takes a well-constructed gate to keep the garden animal-tight. I have considered electrification of the fence along the top, but this has not proved necessary. Deer are not likely to create a problem except in winter. At that time any green crop is almost certain to command attention of Bambi and her friends.

5

Starting from Seed

The plant is the thing, and before the plant, the seed. There are plants not worth taking home. You can identify these by looking for a white mass of roots trying to crowd their way out of the container in which the seed is started. I have asked commercial growers to start tomato plants for me, paying them four times the going rate to get a good head-start plant.

I have generally found that you get the best seed in commercial-grade supplies. Junk seed often goes to the package trade. I can tell good from junk blindfolded. Junk seed is flat like a mini-wafer.



Packaged seeds vs. saved seeds. Notice how much larger and more plump the saved seeds at right are. Even of the saved seeds I would select only the best to plant.

There's nothing inside. I used to try to select good seed out of packages, always with little success. Plump seeds represent a better package of nutrients. This is the head-start material that has to



Of these hand-selected seeds, I would choose the most round and full for planting.

sustain the tomato plant until nutrients from soil and air take over.

The chances of getting what we ordered are increased by buying this seed intended for commercial growers. When I need seed, I get some from a local commercial grower. Look over the seed carefully before you buy. If the majority are flat as if nothing were inside of them, try another source. Look for plump, rounded seeds. Some packages can be tested by holding the package so the seed can be

felt through the package. The seed is the starting point of tomato growing. Disease-free seed are needed and treated seed can be helpful.

Fermentation is nature's way of treating seed.

When I harvest seeds from my own plants, I dry them in the shade and store them in the refrigerator until planting time. Harvest for seed stock is deferred until the tomato is well ripened — plus a little bit longer — but not so long that spoiling threatens. Nature has its own way of protecting its seed. In my view, this protection system should not be tampered with, such as by washing seeds. In my opinion, sunlight drying is the worst possible thing to do.

Spring — as far as plants from seed are concerned — arrives early. Yield seems far away at starting time, but this allows for much reflection on where the crop is going. I have never pursued the idea of growing the biggest tomato. Yield has been and remains my target. Yield will vary from area to area, no doubt, but I like Better Boy tomatoes because that variety produces better than any other variety I've ever tried. Parenthetically, I can't claim to have tried all the 1,500 varieties in existence, but my select-and-proceed system has prompted me to discard varieties due to production shortfalls. Other growers will make their own find-



A plant grown in too small a pot, like those sold in nurseries, will be stressed to exhaustion before you ever plant them.



I recommend a 5- or 6-in peat pot for starting plants.

Temperature

We often speak of biotic geography, but we must never forget that a bit of fine-tuning called bioclimatics is in order. Values for latitude, longitude and elevation often override geographical considerations in determining the performance of a plant at flowering and growing time.

Andrew Delmar Hopkins both coined the term and wrote down the principles of bioclimatics under USDA auspices over four decades ago.

1. For each degree of latitude north or south of the Equator, flowering is retarded four calendar days.

2. For each five degrees of longitude, from east to west on land areas, flowering is advanced four calendar days.

3. For each 400-foot increase in altitude, flowering is retarded four calendar days.

Light and temperature effect the water requirement, and temperature itself affects every single chemical and physical process involved with plants — solubility of minerals, absorption of water, gases, and mineral nutrients, diffusion, synthesis as well as growth and reproduction.

— *From Eco-Farm: an Acres U.S.A. Primer,*
by Charles Walters and C.J. Fenzau

ings no doubt, but from my experience Better Boy has the best disease resistance.

I like to have about six inches of plant above ground at the time of transplanting. The plant should be 3/16-inch diameter at the base — a good, sturdy plant. A spindly plant is a record sapper if allowed to advance to the field or barrel.

The more stress a plant is forced to endure, the more time it will take to grow. If maximum production is the goal, then every day has to count.

A good plant won't be achieved in anything less than a five- or six-inch pot. The minuscule plastic containers most commonly sold in nurseries almost always crowd roots and stress the plant to near exhaustion before they are transferred.

Temperature is a problem at both ends of the spectrum. At 95 degrees for any length of time, you have a problem, especially if plants start running out of moisture.

The marketplace is well stocked with various types of containers for planting needs. I use the standard equipment, but add some liquid compost when watering the plants in prepared mixes. Watering through the bottom by sitting the plant tray into a shallow tray of water helps prevent "damping off." Don't over water. Keep as much sunshine in the area as possible. Transplant into

Memo on Light

Light affects hormones. That is how light regulates all life processes and why it is a dominant factor in development of yields. The ability of a plant to utilize light available to it is a prime limitation. After that, the question is — how much light is available, and how warm is the temperature? Light and temperature go together when they figure as limitations. All of the cell activity within leaves is either fast or slow, depending on how warm or cold it is. The colder it is, the slower it happens and the warmer it is, the faster it happens. In July and August, the Midwest gets its highest temperatures, and cell activity in living plants is greatest. For cell activity to be producing something every day, it has to have raw materials flowing in. A plugged-up plant in July and August functions like a reduced plumbing system. It does not allow the nutrients and the raw material from the root system to come up into the leaf area where it can match the sunlight.

— *From Eco-Farm: an Acres U.S.A. Primer, by Charles Walters and C.J. Fenzau*

three-by-three-inch or larger container cups when the plants show their second set of leaves, not counting seed leaf. Moving the plants to a cooler temperature such as a cold frame will help make the tomatoes stocky until they are ready for setting. Plants will take less water in cooler temperatures, but will need some watering.

My Alabama homestead is some 510 feet above sea level, and the area enjoys 210 days of frost-free growing time. In my world-record year, I enjoyed 220 good growing days. Thanksgiving Day became the cut-off day. Usually November 11, Veteran's Day, closes out the season.

I plant on April 9. Most people push the program by planting during the later part of March at my altitude and latitude. But my plants outgrow them. I rarely have to cover plants to protect them from a late cold snap. Cold weather, of course, stresses plants. I don't think it pays to gamble on stressing plants early on.

I once conducted a test of planting dates. Two plots were prepared identically except the setting date of the first plants during cold weather required nighttime coverage. The second setting was in moderate weather (two weeks later than the first) and produced twenty percent more tomatoes.

Ever since then I stuck to my later-than-average April 9 date.

Set the plants before any bloom buds show in the tip of the growing plant. Follow the directions in “Setting the Plants.”

6

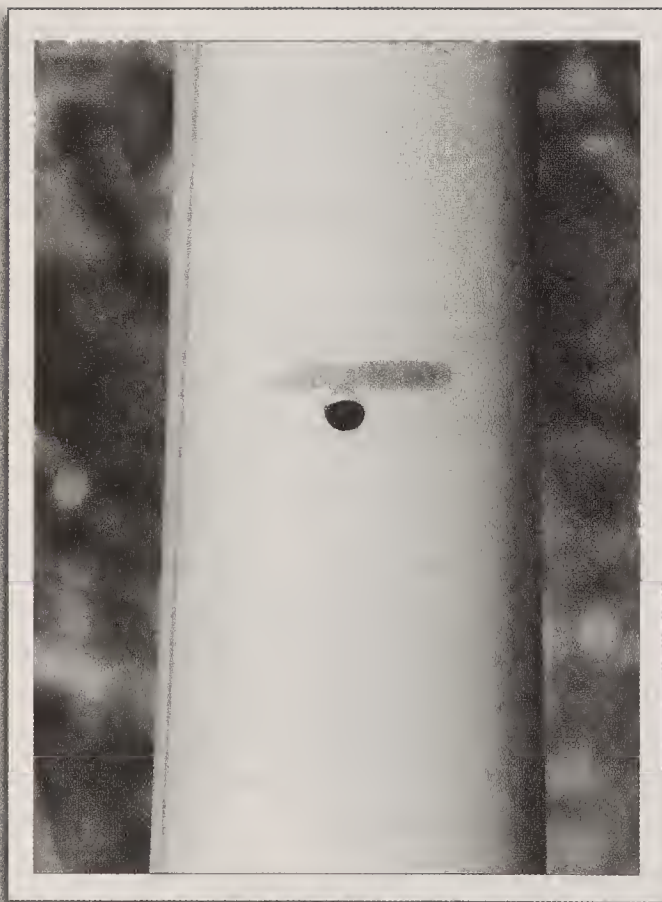
Support Systems: Water & Cages

If it looks like water, most people conclude that it is water. Often growers conclude that if human beings can drink it, then the plants can also thrive on it. Perhaps more would-be record tomato crops are crippled by tap water than by any other variable. City water is treated to kill microbes. If you use it on your garden, you will kill off some of the beneficial microbes in your compost and your soil.

I like to use rainwater on my tomato plants, or pond water or lake water. But on balance the worst water is chlorinated and/or fluoridated water, the kind people drink because they do not know better or because their governments have so decreed. In fact, I take better care of my plants than I do myself.

The fact that water out of the city water main does not keep plants is not the only shortfall. Continued long enough, such watering will affect the soil and account for the same buildup farmers get from triple-superphosphate with its heavy fluoride content. In the absence of pond or lake water, the record grower simply has to plug in ingenuity. Ice-cold water is not good, and if possible cold, deep-well water should be allowed to warm before irrigation application. There's no need to warm the water on a stove; just don't irrigate with frigid water as it will stress the plants. Tank or cistern water can offer an excellent respite, and in some cases of barrel plant growing, perhaps purified water will cancel out the impediment created by modern water systems.

To be sure you'll get a crop, you've got to have water. With water, dry weather does not affect either fond hopes or the best laid plans. Actually, production may be enhanced by dry weather if



My watering system consists of 10-foot sections of PVC pipe with 3/32-inch holes drilled at one-foot intervals. I glue these together to make 40- to 45-foot lengths for deep watering.

timely application of the right water can be maintained.

Humidity often brings on humidity diseases. Nutrient intake through the stomata of the leaves can be a growth factor.

Finally, you can tap downspout water in a barrel and hold it in escrow for hot-cycle irrigation. A small pump and hose arrangement will solve the problem of transporting the water.

There are as many ways of watering tomatoes as there are gardeners. The Group One gardeners that I referred to earlier do nothing and totally depend on the rain. Group Two might water them at the beginning, and occasionally during a drought when the leaves begin to turn yellow. Group Three will do whatever it takes to provide the optimal moisture content for their tomato plants.

The watering system that works best for me is ten-foot sections of three-quarter-inch PVC. In this piping, 3/32-inch holes are drilled one foot apart along a straight line. The pipes are glued together to make forty- to forty-five-foot lengths. Then adequate water line pressure to equalize the pressure flow throughout the system is needed. As soon as seedlings are set out, one water line is placed on each side of the plant line about one foot from the stem. The pipes are placed so that the watering



The irrigation pipe is capped at one end.



A hose fitting is attached to the other end of the pipe.

holes point downward — never upward. Keeping the leaves dry is a good disease preventive measure. This is why I never recommend overhead watering systems; the less water on the leaves the better. In fact, during years of drought my plants did even better than in years of plenty of rainfall. Wet plants succumb to fungal diseases easier than dry plants. It is never necessary to spray water on the leaves of tomato plants.

My plants receive deep watering. It must be pointed out that watering amounts depend upon the soil type. Absorption differs with soil types. Sandy soil will drink up tremendous amounts of water. In Florida, for instance, I poured a five-gallon bucket of water on the soil and it disappeared as fast as I poured it out. Heavy clay, on the other hand, will puddle up — possibly for days. The point that needs to be stressed here is that the goal of watering is to keep the soil under the mulch moist, but not soggy. Too much watering is just as harmful as not enough watering.

When the small plants are tall enough to need support, I take the watering pipes out of the way and place my three-foot-diameter cages around the plants. I then support them in the middle of the cages with the three bamboo sticks. After securing the baskets in a straight row, the first two pipes

are replaced just outside the cages in the same manner as before. These pipes will be about eighteen inches from the plants' stems. I add another set of pipes three feet out from the first set on both sides when the plant is about two feet tall. Most people underestimate the length of the roots and, as a result, fail to take advantage of the absorption capacity of those distal ends. This second set of pipes may need to be added before the plants reach two feet in drought conditions.

I run my water thirty minutes into each pipe. (Your watering time may be quite different.) It takes me two hours to run the water through all four pipes. This is the simplest and least expensive way that I have found to water my plants simply using my submersible pump. The garden hose is connected to the PVC pipes by way of an adapter that can be purchased at most hardware stores. Of course systems can be set up to water through all four pipes at once greatly reducing the time, but consideration must be taken regarding the variation in water pressures from pipe to pipe and from the upper end to the lower end of the pipes. Also a larger pump would then have to be used increasing the expense. A forty- to forty-five-foot pipe will water eight to nine plants placed five feet apart. Why would you ever need more than that anyway?



Pipes are laid on either side of tomato cages. I usually lay an additional pair of pipes parallel to these another two to three feet out. The roots of my tomato plants reach out several feet; in dry weather two watering lines would not be adequate.

Remember that the reason you are reading this book is to beat my record of 1,368 pounds of tomatoes on four plants. With eight plants you will have enough tomatoes to feed the county!

The tours that come by my garden are always made up of people who want to know about water, and they want a quantitative watering test. I have no instrumentation, so I rely on the old “fist” test. The idea is to have the soil wet enough to hold together in a fist without leaking water, and yet not so dry it will fall apart when released. It all depends on the type of soil you have in your garden. A clay soil will give you one kind of a test, and my clay loam will give an entirely different test in terms of percentage of water. Obviously, a sandy soil would be different yet. For these several reasons, I never talk of percentage of moisture. I try to teach people to read their own soils.

Stacked Cages

Call it a trick or call it a system. Better yet, call it an art, this business of having plants reach for the sky until they require the grower to stack one cage atop the first and second to accommodate the plant and its bountiful crop.

I use heavy five-foot-tall, six-inch mesh concrete reinforcement wire for cages. Place the plants five feet apart and you will have bigger plants, more tomatoes, and also have room between the plants to add additional cages higher up. This kind of spacing is also convenient for tying, pruning and picking plants and prevents sides of plants from growing into other cages.

A cage will measure 108 inches in the flat, or counted out eighteen spaces in the six-inch mesh. Wrapped into a cylinder it will have eighteen vertical wires six inches apart. The plant will then be pruned to have eighteen vines tied to the eighteen vertical wires and grown to five feet.

The system I use to fertilize and respondent photosynthesis have linchpin roles in nature exhibiting her potential. I have to have a twenty-inch leaf before I can feel certain that multiple cages will be required. The leaves run a tap into solar energy. Some of my biggest leaves are larger than many tomato grower's plants. The average tomato production in Alabama is merely three pounds per plant. Most of my neighbors get very few tomatoes because they allow the soil to get too hard. They don't water. As a consequence, they get next to no yield — or very little — especially in drier years. They do cultivate, however, which is



Tomato in heavy-gauge concrete reinforcing wire cage.



Hog rings are used to join cages.



Concrete reinforcing bar with a hook welded at the top serves as a "tent peg" to securely fasten the cage to the ground.



Hammer the bar through the second square from the ground to peg down cage.



The finished cage is now secured by the iron bar. Notice how it makes the cage "dimple into" the straw.



Cages are approximately five feet tall.

probably the worst thing you can do for the tomato plant.

The cage has a double purpose, one of which is to keep the hoe at bay. My garden is never cultivated, except for the turning under of a green manure crop.

The first group of gardeners will want to prune for a cage five feet high. Group Two can use two stacked cages, each five-feet high, or ten feet total. Group Three will be able to handle three stacked cages totaling fifteen feet or more. My tallest plant used six five-foot cages!

Don't give up now and throw this book away — this is just the beginning!

A tomato plant can do amazing things. Without freezing weather it will grow for months beyond the freeze date of the plants pictured in this book. If my plants had three or four months more to grow, what would they have looked like? Perhaps someone in the no-frost area of Florida would like some help in growing a forty-foot tomato plant.

My record tomato production was on rolled cages of heavy gauge concrete reinforcing wire approximately three feet in diameter and five feet tall. These cages will last for years and are easily stored. When they are built by joining two ends

with hog rings, those same rings can be clipped at the end of the season in order to stack cages flat. Once in place, I use twenty-four- to thirty-inch lengths of builder's rebar with a hook welded on the top to hold the cage down much as tent pegs hold down a tent.

The most common question people ask after seeing a poster-size enlargement of my world-record tomato plant (I never take a trip without it!) is, "How many plants are inside the cages?" The answer is always the same: one.

7

Setting the Plants

Properly setting your plants gives them the solid start they need, minimizes stress, and in many ways defines the entire growing season. Properly set, you prepare for success. Improperly set, you are courting disaster.

To prepare soil for setting a plant, dig a hole twenty-four-inches across and twelve-inches deep. Save the top six inches of soil to refill the hole. Scatter the bottom six inches of soil around the area. Mix one part compost with three parts topsoil. Use a shovel to lightly skim the topsoil to replace the bottom six inches of soil already scat-

tered out. Do not use chicken manure for this since it will cause “leggy” plants. Firm the soil by standing on it at times while filling the hole. Smooth the soil and leave a slight depression around the center to catch water.

Remove all leaf stems except the pair on the top. Use your thumb and index finger to pinch leaves off close to the small growth coming out at the axil on the leaf. This growth is a sucker which will make one of the eighteen vines to be tied to the cage. Pinching the stem off reduces juice loss which is often seen when pruning is done by use of a sharp cutting tool.

Dig a small hole in the center of the soil/compost mixture to set the plant. If the plants you are setting come in a porous material like peat moss, bury it below ground level and keep it well watered to prevent drying of root.

If you have a cutworm problem, now is the time to put a protective “collar” around the plant. I cut cereal boxes into strips to make a collar four inches in diameter and three-and-one half-inches high fastened into a tube with a stapler. Push the collar one inch into the soil with the plant in the center of the collar. Cover the soil in a band four feet wide starting one foot from the plant line row with well-rotted cow manure or compost one-quar-

ter-inch thick. Cover the same area with a light coating of alfalfa meal. Repeat this on other side of plant row.



I prepare the soil first by breaking it up with this four-tine garden rake.

Mix both sides with a rototiller or whatever equipment is available. Smooth the surface. Mulching is next.

In setting up a plant for cage maintenance and growth, think of the pattern as a nine-square tic-tac-toe arrangement, with the center square left open.

Once the plant is in place, fill in around the new plant with fine mulch at least as high as the layer from baled straw. As noted earlier, a little indentation around the plant is indicated to allow rain and irrigation water to gravitate toward the plant itself. Actually, water maintenance must be passed well beyond any future drip line because tomato roots meander halfway across the garden — yet another reason tillage is harmful.

The mulch you spread around the plant in the center planting square should be of fine material, not too deep, it being remembered that the plant will shade out any mischievous weeds in that area as growth proceeds. I spread this finely chopped hay only about one-half inch deep. Dried grass clippings will work as well. A final caution can never be stated too often: I never leave bare soil to splash on the leaves.

Most of the so-called conventional wisdom you read in magazines and books says to fluff out the

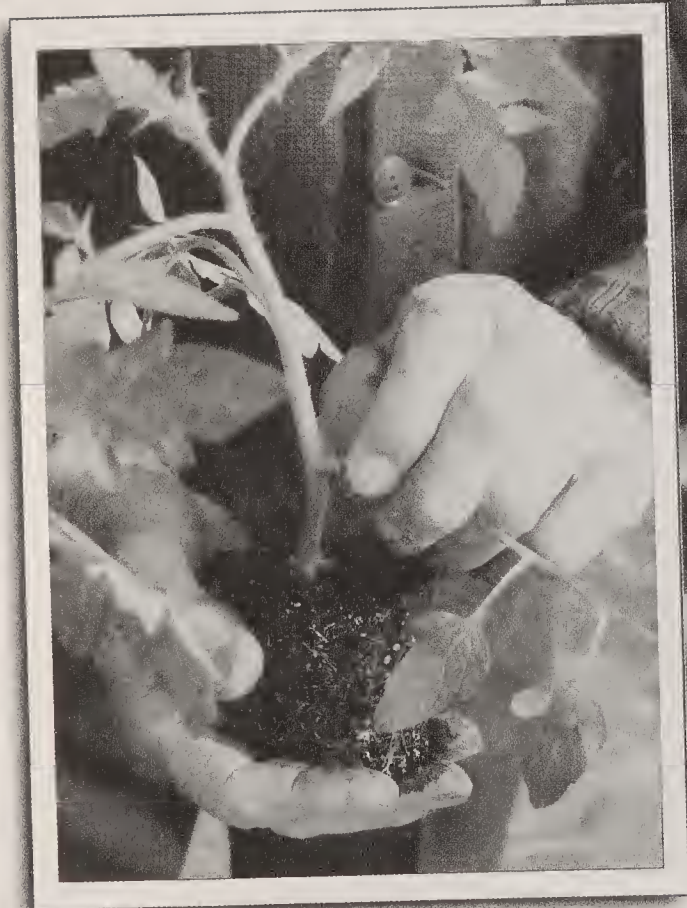
straw so as not to shut off air. I do the exact opposite and keep the straw layers as they peel off of the bale, except for one block. The wheat straw does not get chopped up. It is placed in the garden as a square exactly the way it comes off of the small bale. The squares are pushed together tightly and left that way. I have to admit that it took some years for me to come to this conclusion. This is another key to success.



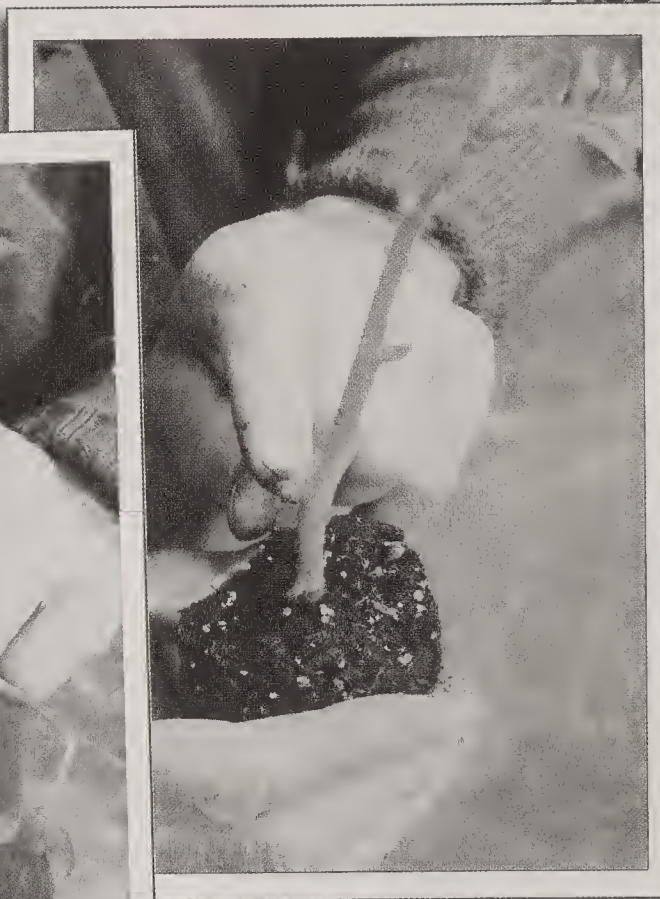
In general, I use one part compost to three parts soil.



Always be certain that soil and compost are very well mixed.



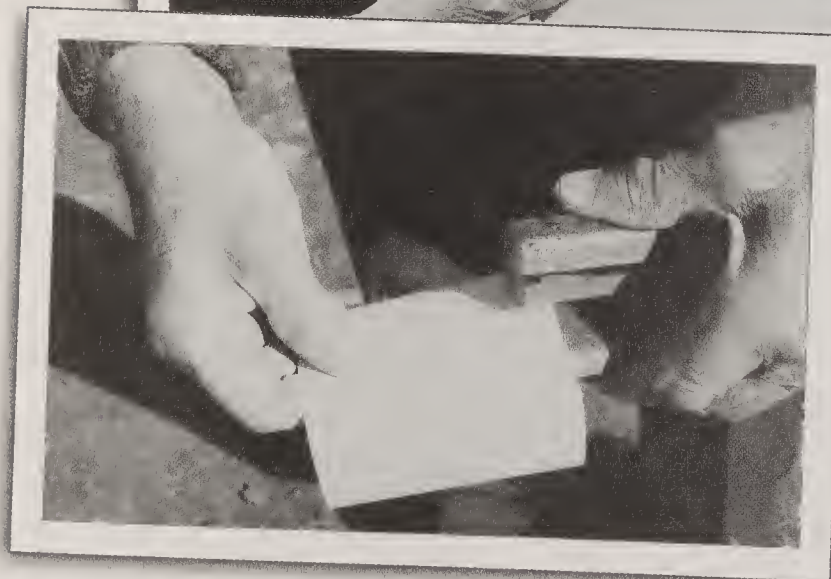
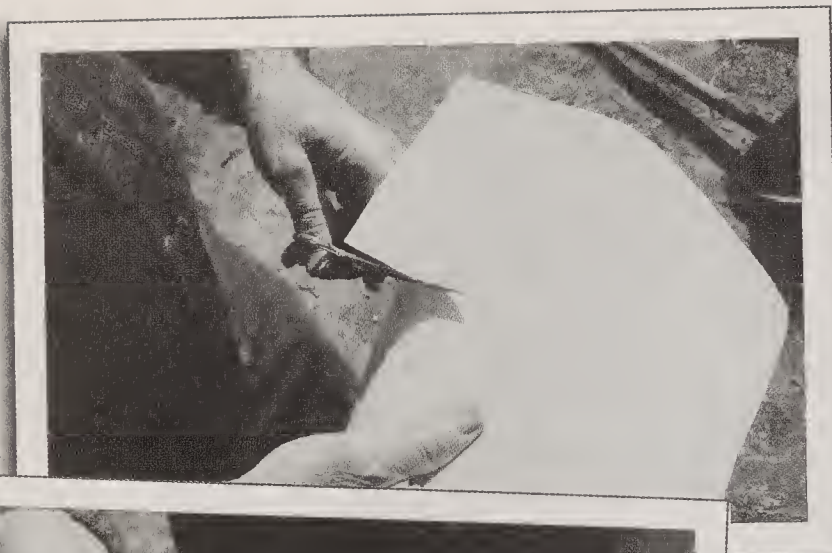
Remove all leaf stems except for top ones by pinching.



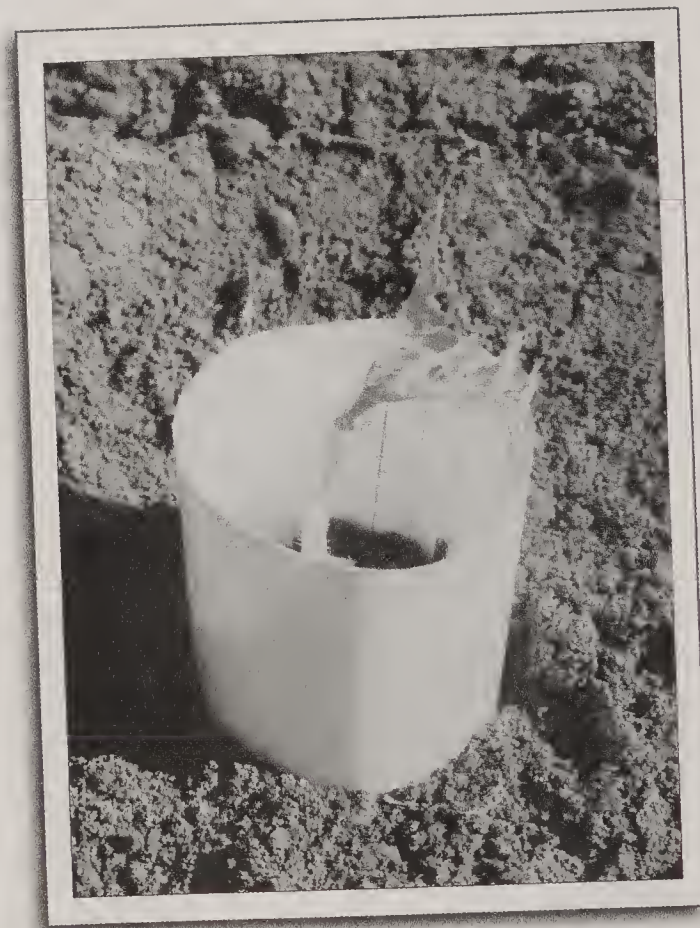
Dig a hole in the center of your soil and compost mixture to set plant.



As you can see, I do not set plants deeply. I maintain the plant's natural soil line during transplanting, just as they were grown in the seedbed. If you are setting plants started in peat moss, however, plant them about one inch below the soil line to prevent dryout.



Use recycled cardboard to make plant collars cut 3-1/2 inches high and 4 inches long. I often use old cereal boxes for this job. Staple the collar together to make a circle with a 4-inch diameter.



Push collar about an inch into the soil with your plant in the center.



Blocks from straw bales are used to form areas around the plant. I peel off the loose straw from the ends of the bale.



The blocks of hay are stacked tightly against each other to form a square around the plant.



The straw shuts out weeds before they start, making hoeing unnecessary.



I use fine mulch to fill in around the plant once it and the bales are in place. I spread the mulch about 1/2 inch deep, well below the level of the hay bales surrounding the plant.

The blocks of straw go out well beyond the cage, of course, and therefore the cage sits directly on top of the straw layers.

I never move the straw once it gets set because those roots come right up to that straw. If you raise that straw, you'll see roots all over the place, even when the plants are just eighteen- to twenty-inches high. You have to remember that roots are always after your compost.

The opinion is commonly held among many gardeners and tomato growers that if you don't scatter the straw the plant's air supply will be shut off. I do not find this to be a problem. If it were not for the lightly mulched center square, air supply to the plants might indeed be a problem. but if you follow my system, you don't have to worry.

Small-baled straw is the most common thing available in my area. Other areas will have to adjust to what is available. Leaves, as mentioned earlier, are marginal unless they have undergone size reduction. Ground to the right consistency they should work, although I have no personal experience in this regard. Also, acidity might have to be adjusted.

Square sections of wheat straw are matchless when it comes to weed control. By denying sunlight to weed seeds, straw shuts out a weed before it



I never break up or loosen the straw layers after peeling them off the bale, despite what the other books will tell you.

starts. Around the tomato plant I like to leave a complete square open. I have found this allows for adequate air circulation.

The idea here is to build a box up against the plant. If weeds penetrate the squares where they join each other, this means the blocks are not pushed squarely together. The ultimate decay of the squares is a foregone conclusion. After the growing season, a rototiller will turn the material that remains into the soil, and then the decay finishes at a rapid pace.

Some people might reject my block ideas for any of several reasons they have conjured up. One argument I consistently hear, aside from the air circulation complaint, is that the mulch will heat up too much and burn the roots. In actuality, on any hot summer day the soil under my mulch is many degrees cooler than uncovered soil, effectively negating this argument. My own deep-seated reason overrides them all: it makes hoeing unnecessary. I hoed enough as a child for a lifetime.

If someone wanted to try roadside growing of tomatoes for a commercial venture, one of the decisions to be made would be to stake or not stake the plants.

Plants set five feet apart with eighteen vines that are each fifteen-feet long would be difficult to

manage. Pruned to one or two stems per stake, the result would be too few tomatoes. A compromise is needed.

Using Cages as You Go

The next question on cages might be how many to use for a plant. A single-cage system could be done by allowing eighteen vines — with one vine tied to each vertical wire, all suckers removed, and the plant topped at five feet just like a wood-staked plant (or no topping, just let it grow over the side of the cage to the ground). In a three-foot-diameter circle there are eighteen vines instead of eighteen plants and eighteen wooden stakes in a row taking up garden space.

A second cage can be put on top of the first in about five minutes by fastening the two together with hog rings. This way the plant can double its yield without demanding additional groundspace. Again the plant can return to the ground over the side.

For maximum production, a third cage can be added to the top. At this point, it becomes a traffic problem on busy roads, and word of mouth will be the best advertisement you will ever have — even if you only do this to one plant.



After the mulch is in place around the plant, they are ready to cage.

If your plants really produce and you have stacked two or more cages, plan on providing extra bracing. I use three stakes, each three feet long, to hold the base cage down. I add three guy wires and often strap on extra lengths of concrete rebar to the sides. It is very disappointing to see your prize tomatoes collapse under their own weight or during severe storm.

All of the secrets to obtain this size plant are revealed in this book. These directions must be carefully followed and the necessary water supply must be available to secure your investment.

Better Boy tomatoes produce all season until freezing in most areas where tomatoes do well. The third cage may not be needed in more northern areas, but big plants have been grown in northern Indiana, Ohio, and across to the East Coast. A rule of thumb — anywhere you see tomatoes growing around five feet tall with leaves from four to six inches long or less will grow a plant ten feet or more with the same number of hours of gardening time.

There is no big investment to start with if you own land, or can rent some. Hand tools will do most everything. Or you can cut the green crops with a lawnmower, use a four-horsepower rototiller for soil preparation and mixing any additives into

the soil. One fourth of an acre of good land will grow plenty of tomatoes and other vegetables with mulches and a rotation system.

An interesting observation for those who grow peaches for U-Pick customers and tomato gardeners in general is tomato plant versus peach tree. Let's say this is the first year trying this new system and you only have about 250 pounds on a twelve-foot plant. This is roughly twenty eight-quart baskets. Peaches are selling for five dollars a basket. Is four dollars per basket a reasonable price for tomatoes in your area? If so, you would receive about eighty dollars per plant for your efforts. We could increase this figure some if there is a buyer of green tomatoes for wrapping in your area. Tomatoes can bring in premium prices in most tomato areas. Better Boys are largest in the earlier pickings. Many tomatoes from double blossoms will produce one-and-one-half to two pounds of fruit. The best offer I had was two-hundred dollars for first pickings from eight plants.

Growing Tomatoes in Containers

Americans, for the most part, do not realize the scarcity of land. The sad thing is that farmland will become even more scarce as the population

grows. I believe we can help the situation by using what resources we have to produce some of our own food.

I realize that not everyone will have a garden spot in which to grow tomatoes. Don't worry. Tomatoes can be grown in barrel containers producing more tomatoes than most people do in their spacious gardens. The size of the container is the stress-limiting factor to be considered in growing tomatoes. Dwarf types will do just about as well in a half whiskey barrel as in the garden. The large determinants and indeterminants, although more space is ideal, can still be grown in containers. My experience with container growing is mainly with a large indeterminate variety such as Better Boys. My plants averaged ninety-five to one-hundred pounds of tomatoes per plant.

Boxes or any type of wooden container around this same size will do. Make sure holes for drainage are drilled in the bottom of the containers. Select good topsoil from the garden or from purchased material. Mix one part compost or well-rotted cow manure to three parts soil. After thorough mixing, fill the container to within two inches of the top to allow for watering. Firm it down with your hands several times as you fill it to prevent settling down later.



These tomatoes, of the Delicious Tomato variety, tipped the scales at up to 3-1/2 pounds each and tasted great. I have successfully grown tomatoes in half whiskey barrels using the same cages I use for garden growing.



This row of barrel-grown tomatoes shows that strong yields are possible even containers. They are caged, pegged, and guy-wired just as in my garden.

Set short stocky plants that do not have blooms or buds showing into the center of the barrel. After setting out plants, cover the soil one to two-inches deep with grass clippings, chopped green weeds without seeds, or most any available material to prevent the plant's leaves from coming in contact with the soil and also to provide a mulch to retain moisture. Compost or rotted cow manure can be added for fertilization on top of the mulch from time to time. Also watering is done on top of the mulch.

Watering will need to be done more often when tomatoes are grown in containers, especially in hot weather. The ten-foot lengths of PVC tubing will work most any place. The 3/32-inch holes for watering are only placed at the location of your containers, so that your plants all receive about the same amount of water. The holes can be covered with electrical tape when moved to another location. Line pressure can be controlled by the use of a pressure gauge in order to ensure that equal pressure is maintained with multiple containers. I prefer this system over drip irrigation. Soak the soil well and let it air out. Water early in the morning but don't let water get on the leaves, as mentioned before, to avoid diseases.



I harvested 111 pounds of tomatoes from this single barrel-grown plant.



Torching barrels and cages is necessary to sanitize and remove last year's tangled growth.



All prunings should be placed directly into a bucket and removed from the area.

Diseases will be similar to those mentioned in the chapter on diseases and insects. Pruning is not usually needed due to the stress from the confinement of the root system. Wheels could be installed on the barrel or box to move the plant out of danger from hail storms, frost, and freezing nights for that fresh Thanksgiving or Christmas tomato.

Sanitation

A fungus each year is almost always a given in the Rainbelt South. The barrel grower can easily

deal with this nemesis by firing the barrel with a commercial torch. Old whiskey barrels have been fired to a charcoal coating on the inside, a requirement of the law. Such barrels are not reused, and therefore they find themselves in the trades, including the nursery trade. A good scorching on the inside only is indicated before the crops are introduced into fresh growth media.

I torch all of the cages, stakes, and wire before I set them in the garden for the spring. Steam cleaning is another workable method of sterilization if it's available.

I always wash my hands with disinfectant soap before I touch my plants, and I have clothes that I use only for gardening. Touching tomato plants after handling dirt, weeds, or even commercial vegetables in the kitchen can be disastrous.

In the fall after harvest, all tomato plant residue is taken away from the garden completely and burned. Actually, sanitation is a continuous, constant process during the growing season as well. Pruned leaves are placed in a container that is used only for pruning waste. All tomatoes not harvested for eating also are discarded and never allowed to fall to the ground. This waste is disposed of daily in plastic bags and picked up by the garbage truck. If you compost the waste, do not use

mix with your “good” compost or use the tomato waste compost on your tomatoes.

Another point that I must stress again and again is not to allow cigarette smoking or tobacco chewing in the garden.

These simple precautions can prevent problems that would otherwise haunt you for years to come.

Mulching

Man's greed would destroy the earth except for the rejuvenation process of the plant. I believe a plant can consume only what the bacteria will release. If we believe in this process, then the mulches — the green manure crops left on the forest floor — are more important than most of us realize. From prairies to woodlands, plant parts of some kind help in the chain of bacterial production.

In gardening, a good mulch is helpful in many ways. For instance, a good mulch helps to prevent blossom-end rot. I have not had a tomato plant with blossom end rot in fifteen years of using mulches.

My plants are never cultivated. This eliminates a lot of equipment and labor. Any remaining mulch is worked into the soil and will grow virtual-



A buffer strip of soybeans feeds natural, slow-release nitrogen to adjacent plants. In this photo it was okra, but a tomato plant's roots also reach far beyond the plant's support cage.

ly any vegetable crop without adding fertilizer the following year.

The soil will be cooler under the mulch. On a hot day, feel the ground under the mulch then check the heat of a spot with no mulch.

Mulch is a great benefit in the prevention of soil erosion and is also one of the best soil builders.

Scatter a box of earthworms on the mulch. It will be a good investment. They are like little rototillers with a fertilizer attachment. Mulch helps some in keeping water from evaporating. I water my plants as needed to keep them continually growing with as little stress as possible.

A good solid mulch will control most common annual weeds and grass. I generally use wheat straw for mulching to reduce weed seed problems. Hay, green weeds, soybeans, and alfalfa are all good mulches if they are free of weed seed.

As I stated, small “square bales” are my choice for mulching. With this bale size I remove layers, or blocks, one at a time and place them tight against one another, end to end, to keep weeds and grass from coming up between them. To prevent nitrogen draw from the soil, put the bales to be used outside in the weather for several months. This way they become partially rotted and tomato plant roots will benefit from the decayed

straw much sooner. If weed seeds sprout in the bales, simply cover them with black plastic until the sprouts are killed. The open space where the plant stands should be covered lightly with dried grass clippings or finely chopped hay or straw from a shredder to prevent soil from washing up onto leaves. This helps prevent soil-borne diseases.

Good mulch has to allow the soil to breathe. This means the materials cannot be allowed to melt down and form an airtight covering for the soil, as is sometimes the case with leaves. I like shredded kudzu, which is available in ample supply in the South. I put such material about an inch deep around the plant extending out about six to eight inches. Then I cover that with heavier mulch so that there is never any bare soil to splash onto the leaf. A powder consistency avoids pitfalls resident in the molding problem. A flow of air fertilizes each time day or night causes the land to inhale and exhale with minute changes in atmospheric pressure. Peat moss has to be excused from this chore, as would be particle size of other materials that could close off the wick effect required for transport of moisture and air. Mulch ultimately becomes fertilizer. Most of it disappears before the summer is gone.

Once the plant is removed at season's end, mulch flows easily into the soil system, to rest and decompose, to take its place in the rotation as food for other plants and as a texture-building medium for the plot.

8

Pruning

Over the years I have developed a system of pruning that has proved itself. From my point of view, there are three ways to prune tomatoes. You can prune for greatest height, greatest weight of harvest, or for the weight of a single tomato. I don't expect to see all of this on one plant any time in the near future.

Much has been written about pruning versus not pruning. My research was done considering the goal of greatest harvest for market growers of small acreages such as roadside markets. I was thinking of small growers, green wrap-packers, etc.



Notice the long leaf length — up to 28 inches — on these tomato plants.



As the plant grows, but before its spread is great enough to tie to the cage, criss-cross three bamboo poles through the cage surrounding the plant. These will provide support.

The more common pruning methods — one stem, two stem, and multiple stems together with no pruning — seldom reach a per plant average of 200 pounds.

Something needs to be done for higher harvest weights. If you're concerned that leaf loss in pruning affects photosynthesis, that is compensated for by larger leaves remaining on the plants. For example, the bottom leaves on the record Better Boy in this book were up to twenty-eight inches long from axil to tip.

I often led guided tours of my garden for people to see my system firsthand and to ask questions about my tomato plants. The point in the tour that caused the most laughter was always the leaves. Someone would say my plants' leaves are longer than their plants were tall. "They are not organic growers," I thought to myself as I joined the laughter.

At times gardeners would tell me it all looks like too much work. I told them about the picture on the front cover of a gardening magazine where a gardener was showing his staked tomatoes that contained fifty plants producing five hundred pounds of tomatoes for comparison of work involved.



Healthy vigorous growth is a sign that pruning time has arrived.

The combined weight of any two of the eight plants I had at that time would have tomatoes weighing more than five hundred pounds. It took six hours to prepare the soil, set the plants, mulch, set the cage over plants, drive three stakes into each cage to hold it to the ground. Look Ma, no hands!

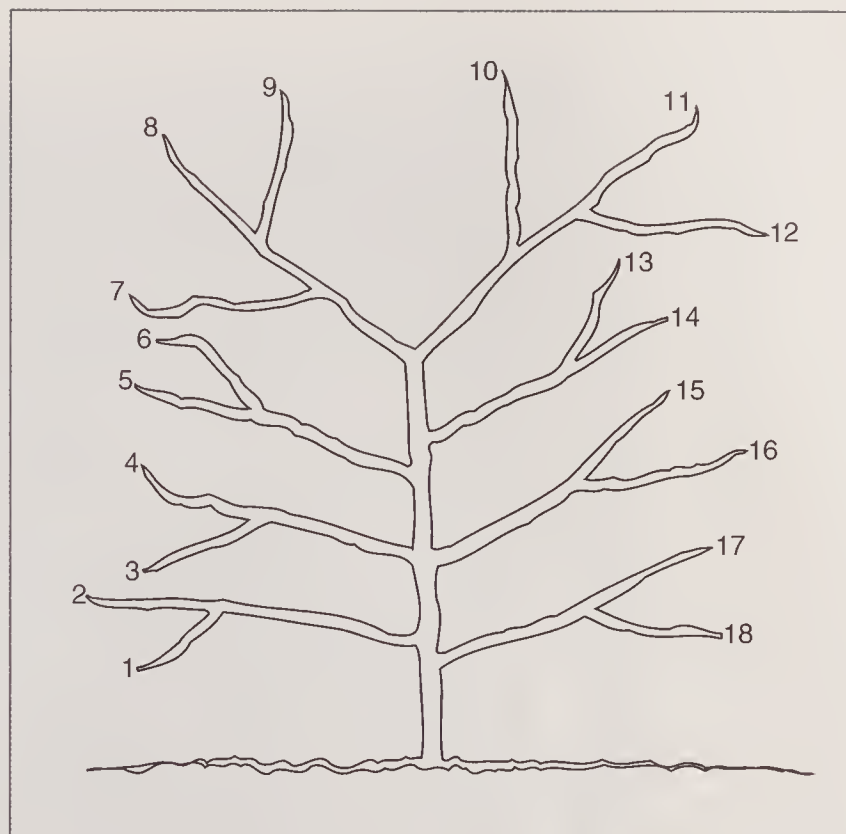
The rest of the year there was no hoeing, no weeding, no cultivating, and less watering. I would simply work the remaining mulch into the soil in



In tomato talk, this entire structure is considered a single leaf. This one measured twenty-two inches. Using my system, leaves over twenty-four inches are commonplace.



Several leaves have been removed to reveal four fruiting clusters and sixteen tomatoes on just two of sixteen branches at only six weeks of growth.



If a tomato plant grew flat and you removed all of its leaves and fruit, this is what my pruning scheme would look like. Six lower suckers are allowed to grow and split once. These twelve branches are led to the outside of the cage and then trained to grow straight up. Each half of the uppermost split is allowed to split three ways, giving you six more branches to be led to the outside of the cage and tied vertically. Of the eighteen total branches, you will find that numbers seven through twelve will be the best producers as the plant's growth is pushed higher and higher.



The leaves have been removed from the base of this plant to reveal how early suckers were allowed to develop and rebranch into twelve of our eighteen branches. Each half of the top fork divides three ways resulting in the final six — and top producing — branches. Notice the bamboo poles used to support the plant until the suckers reached the outside of the cage.



This is an example of a sucker that was allowed to grow forth from a leaf axil. We now have two stems. Without removing suckers, stems of indeterminate plants quickly split and split again resulting in bushy, non-productive plants.



One of the eighteen main "suckers" has been trained to the outside of the cage tied vertically. All ties should be loose to allow for movement and not to damage the soon-to-be-burdened stem.



A sucker grows from the leaf axil. Unwanted suckers should be removed as soon as possible to minimize stress to the plant. I often use tweezers.

the spring for a good crop of most any vegetable. Then I would scatter a good supply of earthworms over the entire plot.

A warning was given for those on the tour who planned to use cages stacked two or more high. A fall could send someone to the hospital emergency room. Should the hospital staff be told how the accident happened, the patient could be put in a ward that wasn't expected.

Last but not least, if you sunburn the roof of your mouth admiring your plants, don't use sunburn lotion. It does not taste good. Believe me — I got indigestion.

Pruning is an art that is much easier to teach by showing than describing. I will attempt to describe how a tomato grows and branches and how to shape the plant for maximum yield. Remember, though, that plants don't grow in the form of clean, two-dimensional drawings. But if you understand the basic concepts and then spend some time really working with your plants, you will be a master pruner in no time. Then you will really be on the road to productive gardening.

In an earlier chapter on planting we showed how to "pre-prune" the very young plant so early growth will be focused.

When the plant is first set out, I have to keep an eye on the possibilities and remove the excess. That is why I never “lay down” a plant or set it deep. Many gardening books recommend this in an effort to establish a greater root system. I believe this to be an error. I need those vines in order to make eighteen branches. Admittedly, laying down the plant for faster root start may allow for the first tomato, but I am not interested in having the first tomatoes harvested, only in the greatest total season production.

After planting, I pinch off the bottom leaves, albeit not the buds. So even though I do pinch off the lowest growth, I take care to allow the lower buds to come on out. The bottom line is my plants are not set deep. The root system will find its ideal depth in any case. Nice, loose soil with lots of compost will allow root systems to develop to the fullest extent.

The mere act of transplanting disrupts the tap root, for which reason I like to keep my roots on the surface; this brings heavy mulching into play and enables me to feed the plant when I want to. Feeding here means liquid compost or regular compost. Water or rain will take it down through the straw. Technically, if you cut out too many leaves, that hurts the plant. I effectively add leaves by



This flower cluster which appeared off one of the eighteen main stems will develop into fruit. By having a large plant with large leaves, it is unnecessary to remove any flowers. My plants will support a heavy load of fruit.



This sucker should not have been allowed to grow, so it has been terminated by pinching off the sucker that would extend it farther, leaving only leaves and fruit clusters.

lengthening them. This casts out a sun net which captures the solar energy needed to make the plant grow.

Are Your Plants Ready to Prune?

Look closely at your plants. Before we can begin to discuss pruning, we must look at the overall condition of the plant. If you do not have bottom leaves two or three times longer than any you have ever seen, prepare a compost or manure tea at once. Your plants are not progressing as they should be.

There are many ways to make a compost — or manure — tea. I prefer the simplest. Place one-quarter bushel or up to one-half or a full bushel (depending on the number of plants you intend to fertilize) of well-aged compost or aged manure in a burlap sack and tie the top shut. It must be aged to prevent burning of the plants. Hand this over the edge of a fifty-five-gallon barrel and fill with water, letting the water run over and through the bag. Allow to soak three to four days agitating a few times each day. Then dip a bucket in to take some of your fresh “tea” and pour in the plant’s root zone, in a circle about four feet from the plant. If you

don’t have mulch, you’ll have to pour it much closer to the plant.

The real benefit of using this tea is the rapid transfer of nutrients to the plant.

Apply a good drenching on top of the mulch and water in, or apply it just before a good rain. Don’t use city water unless you have no choice. Some of the bottom leaves should be at least fourteen inches or longer when the plants reach five feet high in order to make heavy yields.

To prevent storm damage on plants before they reach tying height, place three bamboo poles (or similar material) through the cages so that they look like spokes in a wheel. Tie them at one or both ends so they remain in place. The triangle formed by these poles in the center of the cage should surround the plant’s main stem.

Remember that I only plant indeterminate varieties. Determinate varieties — which will never come close to reaching my levels of production — are destined to be stocky and bushy and will stop growing at a certain point. The fruit will then set at the ends of the stems. If you choose to plant these, do not prune them.

Understanding Tomato Growth

Before we can explain pruning, you must first understand how a tomato plant grows. Off of the main stem — which on my tomatoes eventually resembles a small tree in diameter — you will see leaves branching off. These leaves are important to “feed” the plant with sunlight and shade the tomatoes. Without leaf coverage, sun scalding and cracking will result.

In the crotch formed between the leaf and the stem — also called the *axil* — small shoots will appear. These are called *suckers* and if allowed to grow become full-fledged stems themselves which in turn will send off suckers which in turn will send off suckers forking again and again. If these suckers are pinched off, the stem can be trained to grow straight up the cage. If allowed to grow, the plant can be forced to branch. This is the fundamental process we are controlling in pruning. In the end, every branch (no matter how big) began life as a sucker.

Where does the fruit grow? Another form of branching occurs off of a stem, but not from a leaf axil. This is a fruit cluster or truss. It will be short and carry a few blooms, each of which will become a tomato once pollinated.

Most gardening books instruct people to pinch off many blooms or fruit clusters in order to force the plant’s energy into the remaining tomatoes. They do this because their plants cannot support the levels of production that nature intends. My plants can.

I will describe the ideal plant and my model for pruning. Of course, with nature, things don’t always work out as we intend. A stem might break in a storm. A neighbor might handle a plant too much. One side of the plant might send off more suckers than another. But by and large, in all of my years of gardening, nature has provided the abundance of growth I have needed to train and develop a beautiful plant.

The first consideration in pruning is timing. It does not take much time to successfully prune a plant, but you must be regular. Weekly (or even twice a week) inspections for new suckers is the rule. If you allow the growth to proceed unchecked for weeks, you will be inflicting harm to the plant when you prune. By pinching off unwanted suckers weekly, they are small, the plant does not bleed, there is less of a chance of disease, and the plant’s energy is not wasted. Plants, like people, are unproductive and become sick when they are stressed. Be certain your pruning is not adding

stress to the plant. Ideally, all suckers should be removed before they are one inch long.

The Magic Number Eighteen

Pruning begins on vigorous plants that have three suckers on each side of the first fork or at least on the leading sucker.

All the suckers below the fork will start suckers also. The number of main suckers will usually vary from three to six. How they are set determines how many suckers there will be. For example, if they are placed in a furrow with only the top left to grow, yield is affected. Additional suckers may come from the bottom of the plant at any time during the early part of the growing season. Always remove them.

When tying a plant, use soft, three-ply string tied loosely below the axil. Attach the string to a vertical wire of the cage. Do not use a slip knot as it will tighten around the plant as it grows and will eventually harm the plant. Twine will also work, but smooth string is preferred.

If some branch fails to work, a substitute can be invoked to make eighteen. It takes art, judgment, and maturity to know which branch to eliminate. Obviously, the healthiest are retained.



You can train tomatoes so that they run up and over stacks of cages.

Cherry Tomatoes

Cherry tomatoes are the best choice if height is the goal. My twenty-eight-foot, seven-inch-tall record was a cherry tomato. My cherry tomatoes grew twice as fast as the Better Boys. A healthy cherry tomato should grow two inches per day, while the full-size Better Boy can be expected to grow about one inch per day. My experience with cherry tomatoes is that they are hearty and heavy producers.

Soil preparation, composting, mulching, planting, and tying of vines to the wires of a cage proceed exactly the same for cherry tomatoes as for regular-size tomatoes. About once a week they have to be tied up and trained to reach for the sky. The amateur may plant this in a cage and turn it loose, which will achieve at least some success. For real production, the rules for tying must be observed. Soft string will do; I prefer a three-ply string. In no case should the tie be allowed to choke a stem or require a plant to grow around the tie. Never, never use a slip knot. The much cherished harvest until Christmas is most easily achieved with cherry tomatoes. The cherry tomato is smaller and will not fall off an uprooted vine as quickly as a larger tomato.

Transfer of plants to pots in winter, or even uprooting plants so that the cherry tomatoes can



be allowed to mature in a shed or basement, will often achieve the desired purpose. The plants want to thrive, living off nutrients in the plant and on capital harvested via photosynthesis during the pre-frost season.

Actually, the season can be extended for tomatoes by hanging them in a smokehouse or other shelter post season.

Harvest of green tomatoes becomes necessary when frost makes an untimely entry. Not all tomatoes end up as fried green tomatoes. Most will ripen on the window sill.

Of course, mistakes will happen. If a sucker that needs to be pruned gets bigger than 1-1/4 to 1-1/2 inches long, do not pinch it off as the wound created will bleed. Allow it to grow and pinch off any new suckers and leaves at the tip. Leave the side leaves on and save the fruit cluster as it will yield, but the plant will not develop another major branch.

Suckers that grow on the original eighteen branches should be pinched off if the branch is weak. If it is strong, allow the sucker to grow until a fruit cluster appears, pinching off new suckers.

I often use tweezers to pull suckers off every early. The sooner they are removed, the sooner the growth is directed to your new, desired sucker.

The key to balancing the plant is maintenance of the leaf spread. As a normal plant grows, it presents a Y or yoke. This is generally the break of the first blossom cluster. Let the branches of the yoke grow. One will usually grow faster than the other. Those branches should be led to the outside of the cage exiting the cage at six-inch intervals, the objective being to get eighteen branches to the outside of the cage. These are then led straight up the outside of the cage giving you eighteen vines climbing. The top two grow up to three each, which results in six branches. Six suckers beneath the

topmost fork are also allowed to grow and are allowed to split once. This gives twelve more stems. First contact with the wire will probably be a foot or two above the ground. Each has to be tied to the cage wire, loosely of course. Now you let them grow, pinching — never cutting — suckers. Remember, all growth that comes off the axil has to be considered a sucker.

The key is to permit future yokes that will grow to reach the outside of the cage so they can harvest sunshine and develop those big leaves I've mentioned. This will provide foliage to cover the tomatoes from sunburn, produce less crowding inside the cage, and allow for easier tying and pruning. Most branches will reach the wire in about eighteen or nineteen days. All such objectives must be adjusted to your growing area, of course. Also, the fruit clusters will be on the outside of the cage for easy picking.

Believe it or not, a tomato will ripen best in the most shaded area. Sunlight exposure is not required to ripen a tomato. The deep red tomato might never see the sun.

With this balance in tow, the plant can climb to the top of the cage, then spill over and come back down, or a second cage can be set atop the first for that reach into infinity and into the record books.

Some gardeners might not want the plants to grow any higher. If you don't want to push for the absolute limit, you have two choices in pruning. You can either top the plant once it achieves the desired height, or you can allow it to grow over the side of the cage and back to the ground.

Many gardening books counsel picking the tomato while in a pink stage. Removal of the fruit will permit other tomatoes to reach flesh maturity, but a pink harvest will not deliver the flavor of a deep red, vine-ripened product. This explains why artificially ripened tomatoes taste like cardboard.

9

How to Read a Tomato Plant

How to “read” a tomato plant is most important to the commercial grower. There is a delicate balance between stress, growth rate, pruning and fertilization. Using six-inch-mesh concrete reinforcing wire makes it easy to check growth rates. Measure the average plant at about the same time each day. I like to start the measurements when the leading vine in the cage is tied to the cage. Measure from the center of the growing bud, and not the longest leaf.



Plants grow nicely in safe compost. I grew these to test compost.

For practical purposes, I will use the average growth rate for a Better Boy in my area, which is one inch per day. It is reasonable to assume if the rate goes up or down suddenly, something is affecting the plant. The sooner you correct the problem, the more growing days have been saved, especially if the growing rate has dropped.

Finding the reason for a drop in growth rate will be a problem. The most common possible prob-

lems to consider are: soil too dry, soil too wet, more fertilizer needed, insect infestation, disease, and deep cultivation. Leaf size is a major factor from here on out in order to achieve maximum production. Deep cultivation destroys some of the root system involved in tomato production. At this point the lower leaves should be at least eighteen inches or longer for heavy production of tomatoes per plant. Add more compost or well-rotted cow manure and watch growth rate on leaves. Repeat composting again if necessary. Be sure the recommended pruning methods are followed. On a nice, sunny day look closely at your plants. If they have



The three plants on the right of this picture are growing well while the three on the left are burned by unsafe compost or manure.

a bluish tint on the green color, the maximum correlation has been accomplished.

If the compost or cow manure that is being used is purchased from a source that is not proven, be careful. Some compost and manure products I've seen have had dried chicken manure mixed in with the other ingredients. This will show in an initially high growth rate, but it will cause a slenderized sucker and reduced leaf size. I saw some bagged manure on the East Coast labeled "Cow Manure NPK 2-2-2." Anything above NPK .5-.5-.5 called cow manure would be suspicious to me.

A simple safety test that I use in my own experiments is to set a tomato plant in a quart-sized flower pot filled with pure compost or well-rotted cow manure. If the plant starts to grow nicely it is safe for any type of application without fear of burning the plants.

The few minutes it takes to check growth rates and make the mental correlation work for you will be well spent. This is how I broke the barrier of 250 pounds per plant which had held me up for some time.

10

Tomato Pests & Diseases

The best protection that any living thing has against disease is to avoid stress. Tomato plants are no different. The right nutrients, the right amount of soil moisture, and the correct temperature go a long way in preventing tomato diseases. I don't have control over the temperature, but I have placed much emphasis on providing the other two ingredients. As a result, I have had very little problem with tomato diseases.

Another important practice is observation. I examine my plants daily for insects and changes in the condition of the overall plant. Early identification of diseases can reduce your losses. Choosing disease-resistant, healthy seedlings is also very important. The letters behind the name will describe what diseases it will resist. For instance the letters VFNT mean that there is resistance to verticillium wilt, fusarium wilt, nematodes, and tobacco mosaic virus. Your county agent can help you in identifying diseases that are prevalent in your area.

About Stress

The word "stress" will become the primary word from here on. The more stress that can be eliminated, the better the plant will do. Stress has several dimensions. Clearly, allowing plants to run out of moisture is the worst. Once that sin has been committed, there is no turning back, at least not for that season. Each grower can calibrate the dimensions of failure. For me, a drop in production to a mere 100 pounds per plant is a dismal failure. I suppose some folks would consider 100 pounds per plant a wild success.



Aphids show up in my garden, but they don't stay around for long.

I hardly think of weeds as stress simply because I do not have any. My distaste for hoeing has put weeds out of the equation. Insects can be a different matter. In terms of my own garden, there are two basic insect pests: aphids and the tomato worm. Birds are my cleanup crew as far as tomato worms are concerned. Ladybugs handle aphids. Austrian peas around the perimeter of the garden collect the lion's share of aphids. This concentration brings on ladybugs. Ladybugs clean up on aphids

about the time tomatoes are set. The only problem — if it can be considered a problem — is that I usually have an oversupply of ladybugs, which is no problem at all.

The experts in the schools say there are some fourteen fungal diseases commonly a threat to tomato plants. High-humidity areas of the country — Alabama included — sometimes measure 100 percent humidity on a given hot summer day. This can be a real problem. I have on occasion used Maneb. Some people say it is good and complies with acceptable natural systems. Others disagree.

I cannot stress too strongly the necessity for keeping an open mind, but I have not always tried everything I have heard about.

Choosing a reputable nursery to buy seedlings and seeds is very important. The following diseases are seed borne:

1. *Bacterial canker* — This is the most serious of the bacterial infections and is mainly spread by diseased seeds, but can also be spread by tomato debris. Severe wilting of the leaves occur from the edge first. Stems may be affected starting with the appearance of light-colored steaks then progressing to cankers, and finally a yellow, mealy breakdown of the stem.

2. *Bacterial speck* — As the name implies, tiny green, raised specks appear on the immature fruit.

3. *Bacterial spot* — This produces larger spots on the immature fruit than the bacterial speck. The fruit spots are dark and raised. Spots also appear on the stems and leaves and have a greasy appearance.

4. *Anthracnose* — This disease is seen in ripe fruit, starting with a small sunken area which quickly enlarges. The disease is aggravated when fruit are allowed to be in contact with the ground, and in rainy weather.

In addition to being spread by seeds, the above diseases can also be spread by tomato debris left to overwinter in your garden.

Most of the tomato diseases are soil borne. That is why I put so much emphasis upon mulching. Never allow your leaves to come in contact with the soil. Always wash your hands before touching your plants. Soil-borne diseases are mostly caused by fungi. Fungal diseases are the most common diseases affecting tomatoes and may persist for several years in the soil. Because they are soil-borne, these fungal diseases usually start at the bottom of the plant and affect the lower leaves first, causing a yellowing, then browning of the foliage. This discoloring increases as the season

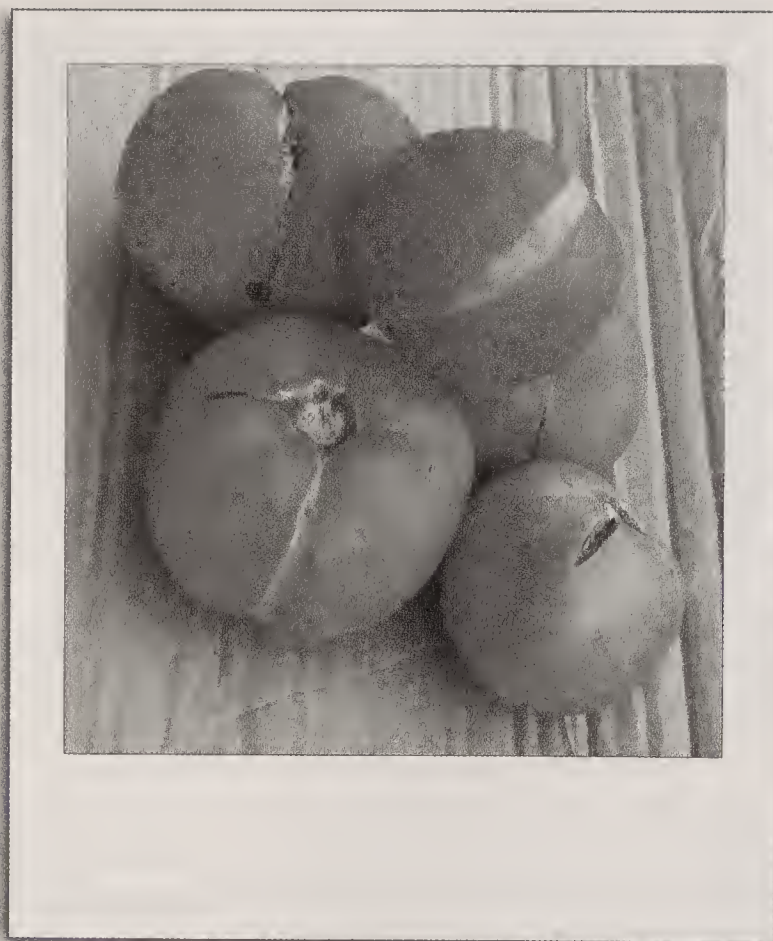


Ladybugs form part of my “cleanup crew.” They are attracted by the aphids which love the Austrian peas I plant around the edge of the garden. As a bonus, they make sure aphids don’t bother my tomatoes.

progresses and is stimulated by wet weather. The entire plant may dry up and die. Soil-borne diseases include:

1. *The blights (Southern, early and late blight)* — Late blight is the same fungus that caused the potato famine in Ireland.

2. *Fusarium and verticillium wilt* — These are more of a problem with the heirloom varieties, and



Cracking of tomatoes can be prevented by being careful to keep your soil moist. Rapid changes from wet to hot and dry are at fault in this case.

cause the typical fungal yellowing from the bottom up; fusarium often affects only one side of the plant.

3. *Gray leaf spot* — This affects only the foliage causing dark brown spots on the leaves that “eat through” the leaf leaving a holey appearance. It is often mistaken for insect damage.

Crop rotation and sanitation are important preventive measures. I never allow tobacco smokers or chewers in my garden. Tobacco mosaic virus is a major problem for tomatoes. While a rare curse, it is very difficult to get rid of. It can be spread from the hands of tobacco smokers. It can also be spread to a healthy plant after touching or brushing up against a diseased plant. Its characteristic is green or yellow mottling of the foliage and slightly curled leaves. Other viruses that affect the tomato plant are cucumber mosaic virus and tomato spotted wilt. Viruses characteristically cause a stunting of the plant, deformed leaves, and fruit that does not mature and ripen properly.

I never touch my plants when they are wet with dew or from rain. This is a preventive measure that should be strictly observed with all of your plants as well as fruit trees.

Other Tomato Disorders

Blossom-end rot is not a disease; it is caused by a deficiency of calcium. The first sign is a water-soaked spot on the blossom end of immature fruit. The spot enlarges, darkens, becomes concave and leaves the tomato with a dark leathery spot. The plant's uptake of calcium can be affected by long, dry spells after a period of rapid growth; it can also appear after excessive rain. Excessive nitrogen can aggravate the condition as well. I keep a steady supply of moisture under my mulch. In fifteen years, I have never seen blossom-end rot on my tomatoes.

Cracking is a problem especially in the South when a heavy downpour follows a very hot dry spell. The tomato which is full of water will crack in a concentric circle around the stem or split down the side. Even though we cannot control the weather, we can prevent the soil from drying out following a rain through watering and the use of mulch.

Bugs & Pests

As I mentioned earlier, most of my insects were controlled by nature. My wife and I enjoyed feeding the birds in the winter. We watched them feed and train their young from the birdhouses



The cardboard collars around my young plants work very well against cutworms.

that we provided for them. In return for the food and lodging, the red birds kept the hornworms and the corn earworms off my plants. The only other insect that was a real problem was aphids. I planted vetch or Austrian peas around the perimeter of my garden. This attracted the ladybugs which in turn ate the aphids off my plants.

One of my students had a tremendous problem with moles. The moles tunneled up under the straw mulch and destroyed at least one-third of the roots of the tomato plants. I went over and taught the whole family how to mole hunt. All you have to do is to take a shovel and walk softly up to the freshest tunnel and wait. Soon you'll see the dirt move. Quickly push the shovel into the dirt between the mole and his return tunnel. Flip the dirt out onto the ground and finish off the mole with the back of the shovel. Everyone in the family got hooked on mole hunting — even the cat and dog! Within a week the mole problems were at a minimum.

I described earlier how I use the mechanical control method of cardboard collars around my young plants in order to ward off cutworms.

I use rye grain as a green manure in my garden and have never had a problem with nematodes, even though they are a big problem in this area. I

attribute this to either the wheat mulch, the green rye manure, or a combination of both.

I also plant hairy vetch around the perimeter of my garden to attract ladybugs.

I believe that my fall planting of rye — and using it as a green manure crop — helped deter nematodes, although I have no concrete proof of this.

Fungi

Sometimes various fungi arrive on the wings of the wind. University specialists told me a black-looking infection came in with a storm. I had to pull up plants and burn them to get rid of the stuff. Again, never compost the plant residue from the tomato patch. Burn it, then burn out the cage with a torch. An ounce of prevention is worth more than a pound of cure.

Sometimes you will see acres and acres of tomatoes destroyed that way — by an agent that came with a storm.

There are many commercially available organic sprays to combat diseases and pests, however the only experience that I have had is with Maneb. I used this if I needed to combat blight. Blight is the biggest enemy to the Southern tomato gardener.

There are many more diseases and pests that attack tomatoes than just those mentioned here. Many books are available on the subject, and your county agent is there to help you if you have a disease problem. My philosophy has always been “an ounce of prevention is worth a pound of cure.” I practice this with my own health and my garden. I have encouraged fledgling gardening students to pull up diseased plants, burn them, and start over. I quickly find out what group they are in, depending on whether or not they follow my directions.

11

Frost & Harvesting

Frost is forever a challenge to the tomato producer. It frets the grower early in the season and it brings the curtain down at some uncertain point in the last days of Indian summer.

Plastic is not of much use in protecting plants once frost arrives. If frost can be kept off the plant, that helps. At freezing temperatures or below, I could never get much protection from plastic.

A few things can be done to make harvesting last longer. Rollaway containers can be moved around to different locations according to temperatures outside. Sometimes young plants can be



I can utilize the same watering system with my container-grown tomatoes as I do in the garden.



A single tomato plant before the freeze.



Same tomato plant after freeze.

saved from those icy fingers with cloth and even paper covers, or pots clamped down over the plants.

In my area, frost does little damage on twenty-foot-tall plants. During an average year it takes a ground-level temperature of twenty-nine degrees to kill the plants.

The day before freeze up, as a youngster, we would cut the whole plant off at ground level and then hang the plants inside the smokehouse. Some of the tomatoes stayed on the vine for many days.

Another old-time system still used today is to wrap the tomatoes in newspaper and store them in crates or boxes in a cool, dry place. The tomatoes will ripen without light.

A late container planting of patio tomatoes in an old chest-style deep freeze, complete with closing the door at night, kept tomatoes going for a limited period.

Some people take late plantings inside the house to extend the growing season. We planted a cherry tomato in a pot in the flower window and it produced many tomatoes.

The end-of-season tomatoes get the most attention. The larger ones are green wrapped and stored for ripening. The smaller green tomatoes are used for relishes and pickles.



If a tomato produces in some way that you like: flavor, color, larger vine, etc., be sure you save some seeds. Careful seed selection over time can produce better plants.

The harvesting is more plentiful during the summer months. Tomatoes are a good source of vitamins A, B and C. Many are made into catsup and tomato juice; many are canned, frozen, or dried.

Some people advise harvesting tomatoes as they turn pink in order to force the plant to produce more tomatoes. Picking them fresh from the vine for eating is my choice.



My system is the ultimate in intensive gardening. Like the giant redwoods and sequoia, I utilize vertical space over acreage. Just a few of my plants will outproduce an entire field of conventionally grown tomatoes — with a fraction of the work.

Many gardeners save seed from the tomatoes they grow. A plant that produces better flavor, color, larger vine, or something special that you like, can be reproduced from saved seeds. My twenty-eight-foot cherry tomato plant was seed-selected over a period of twenty years, and it produces many double-blossom fruit. I always save the seed from double-blossom fruit. Tomatoes selected for seed should be picked just before rotting sets in, but while overripe for eating. Remove the seed, wash and dry quickly out of direct sunlight.

A word of advice, do not pick tomatoes while wet. High-humidity areas are the worst. Also never reuse a cage for your plants without cleaning the cage by steam heat or with a torch. Spray and wash the cage thoroughly, especially if strong chemicals are used.

Start with a few plants to test your skill before making a big investment in your operation. Read the chapter “How to Read a Tomato Plant” and be certain you understand it thoroughly.

12

Not Just for Tomatoes...

My method for growing tomatoes can be used for growing other vegetables as well. I chose to work more intensively with tomatoes because the tomato is such a popular food. But I have used this basic method with many other crops with great success.

There are many forms, flavors and varieties of intensive gardening. Usually this term refers to obtain high yields from a small area. There is the French intensive method, bio-intensive, double-digging . . . the list goes on. In my experience, most of these methods suffer from one fatal flaw: they are



Beautiful peaches grown with my method. In the best year a peach tree can produce thirty-two eight-quart baskets of peaches. This tree is just two years old from setting.



Cow manure two inches thick was worked into a circle ten foot in diameter for planting the seed that grew this 105-pound watermelon.

labor intensive. My gardening methods call for an attentive, perceptive gardener, not one with a strong back. I've seen many a market gardener, intensive or not, suffer from back trouble by their later thirties. The only straining you'll do with my method — whether you plant tomatoes, corn, peaches or oka — is to carry the abundant harvest in to the house.

Looking Beyond Tomatoes . . .

I do some companion planting by arranging my string beans and/or peas around my tomatoes some six or eight feet away. I don't dare cultivate for fear of disturbing the precious roots sent out by my tomato plants. I make a small trench parallel to my last bale of mulch from my tomato plants. Then I fill it with compost, plant the bean or pea seeds, and cover it. Another row of mulch will make those beans and peas really produce. I can taste the peas, cornbread, and sliced tomatoes right now!

The nitrogen produced by the legume gives an added boost to the tomatoes. And this is the right type of nitrogen, the kind that does not dissipate quickly or cause spindly plants.

When I've harvested all of the beans or peas that I want, I simply cover the plant with my

wheat straw mulch and let my tomato plants have the whole plant in the form of a “green manure.”

Whatever the garden crop, I use the same system across the board. Getting that green manure crop into the soil comes first. Applying the mulch in depth follows whether I’m growing watermelons, carrots, radishes, peaches on a tree, or the tomato.

Watermelons like sandy soil. The type of soil I have is not ideal, but I can make an end run around the problem with judicious use of compost. Big watermelons are grown in sandy areas, such as in Arkansas and certain parts of Texas, Georgia, etc. Actually it takes quite a bit of territory to follow good watermelon experiments. I have grown watermelons of up to 105 pounds in my garden, but to grow big watermelons you need space and a stretched out locus for each plant. The key, as far as I am concerned, is compost and mulch, and an absence of tillage. Of course I clip the vines once a target melon is in view. To get a 105 pounder, I pick off the competing vines.

Here in northern Alabama variety counts, as it does in any sector of the country, and this is something you have to determine for each area. Charleston Gray works well in this region. It’s a rather old-fashioned variety, but it does a real good job. The biggest I’ve ever grown was Cobb’s Gem.



I had to get some help to move this 151-pound squash. I switched over to yellow squash the next season.



I was so proud of this four-pound pear that I've kept it in my freezer to show interested visitors what my method can do.



The same year I was on the cover of the *Guinness* book, this okra took the record — 17 feet, 6-1/4 inches! It has since been broken by a Florida grower working with a much longer growing season. And the taste was great — big does not equal tough.



Pecan trees — planted from seed — are shown in their first year.



The same pecan trees are shown early in their second season.

There are bigger ones, if that is the goal. The world's record for a watermelon is way over 200 pounds.

I cannot stress too much that my methods work in growing garden crops, whatever they. I once grew a radish that weighed eighteen pounds, two ounces. That was accomplished by digging a trench and filling it with compost. You might say that basically I grew it in compost. I used heavy compost down the center. The roots wandered out the sides without damaging growth prospects. Of course, everything was mulched heavily. Again, you have to avoid cultivation. I'm sure that's the reason the French Intensive method is so successful. No one steps on the soil and no one runs power equipment — or even a hand hoe — near the root system.

You can transport that into the fruit arena. I've grown half-pound plums — Ozark Premier, to name the variety. Dressing the tree to the drip line with well-digested compost and covering the area with mulch has to rate attention as a must. All fruit trees require mulch. That's a rule. Generally six to eight inches will do. Wheat straw is preferred. However, I don't apply fruit tree mulch until later in the year, or until the danger of frost is passed.



Large, sweet tangelos grown by my method.

This prevents warming ground from forcing earlier blooming.

Pecans, which are grown south of the Arkansas line, do particularly well using the compost/mulch system. My experience in this area has been that of a consultant and as a producer of sprout seedlings. I have produced seedlings up to six feet, two inches in one growing season — from seed. Pecans sprout easily when placed in the right medium. Simply inserting the seed in the soil will do the trick if moisture and nutrients are in place



These bunch onions grew almost waist high. A normal height for this variety would be just twelve to fourteen inches. Most important, the onion size below ground was big.

— in short, if the soil is laced with well-digested compost. Heavy feeding with foliar spray is indicated. These plants need additional nitrogen. Fish-type foliar sprays work wonders.

The pecan can be propagated simply by planting the whole nut without any attempt to scarify or treat the shell. The green shell comes off, generally speaking, when the nut is shaken from the tree. Two inches of compost mixed into the soil at the time of planting does the job. Here the key is loose soil and heavy mulch.

First principles are just that — first principles. I have consulted with growers on just about every fruit grown in North America: citrus, grapes, pears, nuts, you name it, always relying on the principles expressed above. Compost and mulch work together like ham and eggs, soil and water, plants and tomato cages.

My methods work with flowers too. My wife enjoyed flowers so I grew a hibiscus flower twelve inches across for her.

It would be pushing the point to test all the garden crops from cabbages to peas, with yams thrown in for good measure. By going the extra mile, the gardener can set records, often records as dramatic as those I achieved in tomato production. There are exceptions. Carrots are hard to grow in

Alabama clays. Soils have to be kept a bit on the alkaline side, a demand easily met with that star of all nutrients, high-calcium lime. I've produced carrots eighteen inches long, again relying on a compost trench to accommodate the spike — the root that wants to hit the center of the earth. It takes special work to achieve such results given the soils we have in much of the rainbelt South. The bottom line with carrots: grow them almost exactly as you would a tomato.

Withal, it would be correct to say that my tomato formula soil has been used in the past. Often it is possible to achieve better photosynthesis, to increase twining and greater earfill, but the dramatic changes in production records achieved for tomatoes will always prove elusive for corn.

This book focuses on growing tomatoes, but the principles work with many other plants, probably all plants. Learn this method, use it, and grow what you want.

13

Trials & Tribulations Along the Way

Life's successes are most often preceded by failures. Thomas Edison, for example, failed many times before he invented a working light bulb. Abraham Lincoln lost numerous elections before he became president. The key is to keep the goal in focus and not to give up.

When I first began experimenting with my gardening techniques, I had a lifetime of memories, thoughts or hypotheses if you will, concerning the natural way in which plants should be grown. I



Five years from start to my world-record tomatoes.

explained earlier about my “revelation” of natural compost while visiting in the Sequoia National Park. I remember far back into my childhood observing that grass growing around a stack of old hay was much greener and healthier. I had a strong “knowing” feeling inside that these experiments would be successful. This provided the intestinal fortitude that I needed in order to push ahead in spite of the obstacles encountered.

It took me five years from the time I first began my tomato experimenting until I reached my world’s record. I am still studying ways of improving my techniques. The obstacles that I have faced just make me more determined to do better next time.

My first compost pile was a total failure. It turned into a rotten mess. Like most beginners in composting, my compost did not heat up. It took three batches before I had one that would heat up and not offend my neighbors. I learned that every batch of compost is different. The weather conditions, the ingredients, and the amount of turning, are only a few of the variables that affect the quality of compost. The key to composting, as well as growing plants, is observation. This can never be over emphasized. I learned to observe my compost on a daily basis and provide what it needed when it

needed it. For instance, I learned that the moisture content is a governing factor in quality compost. On a squeeze test with a handful of compost, the compost should be moist, but not dripping. I control moisture by covering the compost with plastic and watering it.

I once had a disagreement with some university agriculture graduates. They were working for a large nursery owner who was considering using my compost. After testing my compost, they informed me that my compost would not grow anything because the salt content was too high. I promptly pulled out the pictures of my tall tomato plants and showed them what that compost had grown. These young men were not taught that the salts in natural fertilizers are chelated. *Chelate* means that the salts are complexed; their characteristics are changed so that the salts do not adversely affect the plant.

A university professor found out about my techniques and asked to see me. During our conversation I realized that this man had the wrong motives for wanting to know about my methods. When I became vague and elusive in my replies, he became very angry and said, “You know that I can make you tell me all of your secrets!” Thank goodness all my dealings with university professors

have not been this bad. Another professor in the same state praised my techniques and provided names of pecan growers with whom I began to work in order to improve the growth rates of pecan trees.

I had to deal with people who just refused to believe that anyone could grow tomato plants as big as mine. One person in California saw my pictures and accused me of using trick photography. Another man said that it was the whiskey in my whiskey barrels that made the tomatoes grow so big! Nine out of ten people who came to my place and saw the tomatoes thought that I had a miracle compost or a secret formula.

Jealousy was another problem that I had to deal with. I had some neighbors who were so jealous that they refused to give visitors directions to my house. Another neighbor shot up a record-size pumpkin with a BB gun.

Then there were the thieves. One year I grew some very large citrons; citrons look just like watermelons. Someone kept stealing them at night. I would find the melons in the woods the next morning, burst open. Citrons are white inside and do not have a good taste. When I finally caught the neighbor who had been stealing the melons, he said,



People seeing my photographs sometimes drew their own conclusions about my "secret formula." The whiskey barrels also raised eyebrows.



At the marina, wild birds would feed right from Jo's hands. My dear wife tamed the wild birds, the carp and me!

"What kind of watermelons are you growing anyway?"

Another year I had thirty- to forty-pound watermelons. I live next to a marina and the fishermen would come by and eye my big melons. One man in particular came by every day. I knew what he was up to, so I picked up something which in my childhood we called "crotin oil." I injected the largest watermelon with it. The next morning, the watermelon was gone, as expected. That afternoon, I went over to this man's house to pay a casual visit. His wife said that he was in the bathroom and could not come out. I told her to tell him the next time he wanted a watermelon to just ask me for one. He and I got many laughs over that episode. He said that he would never steal another watermelon.

Other people's mistakes cost me a lot of time and money. I learned quickly not to allow smokers or tobacco chewers in my garden. Children would kick and run into my plants and damage them. One mistake, which cost me a whole growing season, was the time I bought tomato plants from a local nursery. They were labeled Better Boy, but they turned out to be cherry tomatoes.

In spite of the many trials and tribulations, my experiences with gardening have been very sat-

isfying and rewarding to me. My dear wife, Jo, was always an encouragement to me. There have been many other people who have also offered much encouragement over the years. I have kept letters that people wrote to me saying that God had his hand on me — otherwise how could any man grow plants like I have?

I have also had some wonderful neighbors who have helped me over the years. One woman, Brenda Jarvis, found out that there was another organic gardener in the neighborhood and quickly became one of my most avid students and a very good friend. Over the years she has told me, “Mr. Wilber, don’t you dare kick the bucket before you teach me all that you know!” She was the single person most instrumental in making this book a reality. She encouraged me to write it and has been a big help from the very beginning in writing, editing and encouragement. I’m a gardener, not a writer, and her labor was invaluable. She, along with you, my readers, are charged with the task of keeping my life’s work intact, alive and growing.

Special thanks go out to the people at *Acres U.S.A.* who worked so hard to make this book a reality, particularly Charles Walters and Diane Vance who helped craft the written words, and

Laura Thorn who made it such a beautiful “scrap-book” of my gardening life.

Barbara Pleasant was gracious enough to read the manuscript and lend her support for the project in the form of her delightful foreword.

Perhaps the most important person in the telling of my little gardening story is Joyce Rodgers who took the best pictures of my world record plants in this book. Without her photos, nobody would ever believe how bountiful nature can be. During her many visits to photograph my garden she often urged me to share my knowledge in the form of a book. Without her photos, many of my techniques and accomplishments would be locked away in the memories of just a few people.

Glossary of Terms

aerobic — Living or acting only in the presence of air.

anaerobic — Living or acting in the absence of air or oxygen.

aphid — Any of several kinds of small, multi-colored sucking insects, usually gathered on new growth of plants.

axil — The angle formed between a stem and the stem of a leaf; normally the site of a bud or sucker's appearance.

azotobacter — A large bacteria occurring in soil and sewage and fixing atmospheric nitrogen.

chelate — A chemical compound that combines a metallic atom with a molecule using multiple chemical bonds.

colloidal clay — An extremely fine-grained clay consisting of minute particles larger than molecules that remain suspended, rather than dissolving or settling. In the soil, the colloid holds fertility elements for release to plants and microbes.

compost — A mass of rotted organic matter used to feed plants.

cutworm — A night-feeding moth larva that lives in the ground during the day. It chews at the base of tender plants.

determinate — A kind of plant that shuts down growth at flowering.

dolomite — A mineral consisting of calcium magnesium carbonate generally from limestone.

foliar feeding — Applying nutrients to the leaves of plants by spraying.

fusarium wilt — A soil-borne disease that infects the roots or seeds of many plants causing wilting or dieback.

green manure — Organic crop material used as fertilizer to add nitrogen to the soil. Generally accomplished by growing the crop then turning it under the soil to be fertilized.

humus — Organic matter in soils which has been well decomposed.

indeterminate — A kind of plant that continues to grow while flowering, such as indeterminate tomatoes, which continue to grow until they die, or a flower spike that continues to elongate even as the lower blossoms open.

kudzu — A common name for *Pueraria lobata*, a fast-growing vigorous perennial vine introduced to the southeastern United States from China and Japan for fodder and erosion control. A somewhat woody, hairy vine that grows to 60 feet with oval or diamond-shaped leaves.

legume — A plant of the Leguminosae family, the fruit or seed of which is used for food — such as beans and peas, or as a soil-improving cover crop — such as alfalfa and clover.

loam — A general term for mellow soil consisting of 7-22 percent clay, 28-50 percent silt and less than 52 percent sand, that is also rich in organic matter.

mulch — Any of many organic or inorganic materials such as leaves, hay, straw, manure, or black plastic spread around plants to prevent moisture loss and discourage weed growth.

nematode — A microscopic worm. Some are plant pests, infesting mostly roots but sometimes foliage; others are beneficial insects preying on soil pests.

nitrogen (N) — An element essential to plant life; usually the first element in the soil to be depleted. Represented as the first of three numbers in commercial fertilizers, i.e., 5-10-5 NPK.

pH — The degree of acidity or alkalinity of the soil on a scale whose values run from 0 to 14. Seven represents neutrality, numbers below seven increasing acidity, and numbers greater than 7 increasing alkalinity.

phosphorus (P) — An element used by plants for root and tuber growth and the production of flowers and seeds. Represented as the second of three numbers in commercial fertilizers, i.e. 5-10-5 NPK.

photosynthesis — The conversion of light energy, water, and carbon dioxide in the presence of chlorophyll to carbohydrate, with oxygen release as a by-product.

potassium (K) — An element used by plants for growth. Generally present in soils but not always in a form easily absorbed by plant roots unless humus is present.

sucker — A rapidly growing shoot rising from an underground root or stem.

superphosphate — A fertilizer that supplies phosphorous and can force some plants to grow faster.

tillage — The practice of hoeing the ground to destroy weeds and loosen the soil after it is planted.

tobacco mosaic virus — An extremely contagious virus which will infect tomato plants.

tomato hornworm — A large, bright green moth larva with a hornlike hook at one end. It feeds on the leaves and fruit of tomatoes and other vegetables.

verticillium wilt — a wilt disease caused by soil-borne imperfect fungi.

vetch — A genus of mostly trailing annuals, biennials, and perennials, many of them roadside weeds, some native to North America. They grow from one to six feet, with leaves divided into leaflets with a tendril at the end. They have spikes of purple, rose, white, or blue pealike flowers and long thin pods resembling peapods.

Index

Acres U.S.A., 121

aerobic action, 25

aerobic compost, 27

alfalfa, 75

alfalfa meal, 58

anaerobic action, 25; and nutrient loss, 25

anthracnose, 97

aphids, 96, 100

Austrian peas, for pest control, 96, 100

axil, 57, 79, 84, 88, 89, 91

azobacter, 31

bacteria, 32, 73; antibiotic effects in soil, 32

bacterial canker, 96

bacterial speck, 97

bacterial spot, 97

baled straw, 58-59; and air supply to plants, 65-66; around tomato plants, 63-65; decay of, 66; as mulch, 75; placement of, 75; preparation of, 75; and weed prevention, 64-66

bamboo poles, for plant support, 87

Better Boy VFN, 20, 40-42, 68, 69, 79, 90, 93, 120

bioclimatics, 42

birds, to control insects, 96; and pest control, 99-100

blights, 97, 100

blossom-end rot, 73, 99

bone meal, 31

branching, 82-83

cabbage, 115

cages, 50-55; bracing of, 68; care of plants in, 66; materials for, 50; measurements of, 50-55; placement of, 65; stacking of, 52; torching of, 73

calcium, 99

carbon, 31

carrots, 111, 115-116

cell activity, 43

Charleston Gray watermelon, 111

chelate, 118

chemicals, toxic, 15; synthetic, 16

cherry tomatoes, 105, 120

chicken manure, 21

cistern, 45

citrons, 119

citrus, 115

Cobb's Gem watermelon, 111

cold frame, 43

collars, 99-100

colloidal clay, 3, 28, 36

- comfrey, xi
- companion planting, 110
- compost, xi, xii, 3, 11, 12, 24, 35, 36, 45, 59, 73, 85, 87, 94, 111, 114; alfalfa in, 28; consistency of, 24; creation of, 27-31; failure of, 118; ingredients used, 27-28; liquid, 42, 85; making cages for, 28; and nitrogen loss, 25; as soil conditioner, 25; soybeans in, 28; storage of, 29; squeeze test, 118; temperature of, 25; testing of, 31; turning of, 29; water-holding capacity of, 25; watering of, 28-29
- composting, 2, 23-34
- concrete reinforcement wire, 50, 93
- concrete reinforcing bar, 52
- container gardens, 1
- containers, growing tomatoes in, 68-72; planting tomatoes in, 71; preparation of, 69; sanitation, 72-73; size, 69; torching of, 72; watering, 71; wooden, 69
- corn earworms, 100
- cucumber mosaic virus, 98
- cultivating, 79
- cutworms, 57, 99, 100
- deep-bed, 1
- deep cultivation, 94
- Delicious Tomato, 69
- determinants, 69, 87
- disease, 72, 95-101; fungal, 48, 96-97; humidity related, 46; soil-borne, 75, 96-98; spread by tomato debris, 97
- dolomite, 3
- double-blossom fruit, 107
- drip irrigation, 71
- earthworms, 75, 84
- Eco-Farm: an Acres U.S.A. Primer*, 42, 43
- Fenzau, C.J., 42, 43
- fertilizer, bagged, 31; chemical, 23, 25, 32; fish foliar, 115; natural, 23, 118; salt, 1, 15; synthetic, 3, 16
- flowers, 115
- foliar spraying, 12, 115
- French Intensive method, 114
- frost, 103-107
- fruit trees, care of, 114
- fungi, 100
- fungus, 72
- fusarium wilt, 95, 97
- garden, drainage of, 35; location of, 35-38; sanitation, 73; and tobacco contamination, 73; and tree roots, 35; water sources for, 36
- granite dust, 28
- grapes, 115
- gray leaf spot, 98
- green manure, 31-32, 100, 111, crops as source of, 20, 36; mowing of, 37
- Guinness Book of Records*, 1, 13, 20

guy wires, 68
 hardwood ash, 28, 31
 harvesting tomatoes, 103-107
 hay, 3, 27, 75
 hibiscus, 115
 high-calcium lime, 116
 hog rings, 52, 53
 hormones, 43
 hornworms, 100
 Hopkins, Andrew Delmar, 42
 humic acid, 29
 humidity, and disease 96
 humus, 23, 25, 32; carbon in, 32
 indeterminates, 69, 87
 insecticides, 23
 intensive gardening, 109
 irrigation, 46-50, 58
 Jarvis, Brenda, 121
 Joe Francis System, 33
 kudzu, xi, 3, 27, 75; facts about, 26
 ladybugs, 96, 100
 leaf spread, maintenance of, 91
 leaf stem, removal in planting, 57
 loams, 19; clay, 36; sandy, 36
 Maneb, 96, 100
 manure, xii, 3, 12, 28, 36; in compost, 25
 manure, chicken, 21, 28, 33, 57, 94; dangers of, 33; high nitrogen in, 27; nitrogen level of, 33; other compounds in, 33; manure, cow, 28, 94; manure, horse, 32-33; nitrogen concentration of, 32; safety test, 94
 manure compost, 21
 manure tea, 87
 microbes, 31, 45
 microorganisms, 25, in compost, 32
 minerals, 36
 molasses, 31
 moles, 100
 mounds, 1
 mulch, 3, 6, 12, 35-36, 58, 73-76, 99, 110-111; and air flow, 75; and disease prevention, 73; as fertilizer, 74-75; method of, 75; and soil building, 75; and soil temperature, 75; straw as, 11, 14, 100, 111; system of, 37; and weed control, 75
 nematodes, 36, 95, 100
 nitrogen, 20, 23, 31, 37, 75, 99, 110; organic, 30
 N,P, and K, 3, 31
 nutrients, 95; intake of, 46
 nuts, 115
 observation, importance of, 118
 okra, 112
 onions, 115
Organic Gardening, xii
 organic grower, 16
 organic matter, 25, 31; as pH buffer, 36; residues, 32
 organic movement, 9
 peach trees, 109, 111

peaches, U-pick, 68
pears, 112, 115
peas, 115
peat moss, 57, 75
pecan trees, 113-115
pests, 95-101
phosphorus, 20, 31, 36
photosynthesis, 79, 116
plant collars, 57-58, 62
plants, touching of, 98
Pleasant, Barbara, xii, 121
plums, Ozark Premier, 114
poisons, 23
potassium, 20
produce, record-setting, 13-15
pruning, xii, 50, 77-92; mastering, 84-85; methods of, 77-78; timing of, 88-89
PVC pipes, 46-50
radishes, 111, 114
raised beds, 1

rebar, 55, 68
Robbins, Ann Roe, 21
rock minerals, 21
Rodgers, Joyce, 121
rollaway containers, 103
rye, 2, 31, 36, 100; and nematode control, 36
salts, 118
sand, 36
seeds, 39-44; disease-free, 40; from harvested tomatoes, 40, 105-107; junk quality, 39; selection of, 2; what to look for, 39-40
seedlings, 48; disease resistant, 95; and light, 42; watering of, 42, 43
Sequoia National Park, 3, 118
setting tomato plants, 57-76; illustration of, 61
soil, 94; clay, 48, 116; covering of, 37; "fist" test, 49; moisture content of, 37, 95; pH, 36; prepara-

tion of, 36, 57; sandy, 48, 111; testing of, 36; water test, 49
soybeans, 74-75
squash, 111
staking system, 2
stems, training of, 88
sterilization, of cage materials, 73
stress, 95-96
submersible pump, 48
suckers, 57, 82, 86, 88-89; training of, 83; unwanted, 84
sudex, 27
sugar, 31
sunlight, 35
support systems, 45-55
tank water, 45
temperature, 42, 95
tobacco, 120
tobacco mosaic virus, 95, 98
tomato plants, absorption capacity of roots, 48; branching, 88-92;

- cleanliness in handling, 73;
- color of, 94; covering 105; daily observation of, 95; disposal of residue, 73; growth rate, 93; leaf coverage, 88; and leaf size, 79-81, 87, 93; measuring, 93; pinching of, 57, 60, 88-92; placement of, 58; planting dates, 43-44; purchasing, 39; reading of, 93-94; roots of, 58; rotation of, 32, 35, 98; sanitation of, 98; spacing of, 37, 50; staking of, 66; topping, 92; training to cages, 88-92; tying, 89; under-standing growth of, 88; and water 45-50
- tomatoes, ripening of, 91
- tomato seedlings, see *seedlings*
- tomato seeds, see *seeds*
- tomato spotted wilt, 98
- tomato worm, 96
- tomatoes, about, 19-21; cherry, 90; cracking of, 99; determinate, 20; dwarf, 69; and frost, 20; his-tory of, 21; indeterminate, 19-20; location of plants, 20; pick-ing when wet, 107; proper fertil-ization of, 21; ripening after harvest, 105; soil preference of, 19; varieties, 20; wrapping, 105; yield, 40
- torching, to prevent fungi, 100
- toxic sprays, 1
- triple-superphosphate, 45
- Twenty-five Vegetables Anyone Can Grow*, 21
- USDA, 15, 42
- verticillium wilt, 95, 97
- vetch, 2, 31, 36, 100
- VFNT, 95
- viruses, characteristics of, 98
- Walters, Charles, 42, 43, 121
- water, and chemical buildup, 45; chlorinated, 45; dangers of too much, 48; downspout, 46; effects on leaves, 48; fluoridat-ed, 45; lake, 45; pond, 45; rain, 45; tap, 45; temperature of, 45
- watering system, 46-50; duration of watering, 48; overhead, 48; placement of, 48-49; water pres-sure, 46
- watermelon, 111-114
- wheat straw, 3, 75, 115; see also *mulch*
- Wilber method, for other crops, 109-116
- Wilber, Charles, birth of, 4; child-hood of, 5; competitive nature of, 6; experimentation with gar-dening, 118-121; prizes won by, 6-7
- Wilber, Jo, 8, 121; and hand-raised carp, 9-10; and wild birds, 9
- wildlife, 37
- wood ash, 3
- yams, 115



About *Acres U.S.A.*

Acres U.S.A. is the monthly journal for organic and sustainable farmers and serious gardeners, and for all those seeking to reduce or eliminate the use of poisonous sythetic inputs in their growing practices. Articles and regular columns present hands-on, practical information on soils, fertility management, natural pest and disease control, non-chemical weed control, cover cropping, crop rotations, alternative and specialty crops, alternative marketing systems, management-intensive grazing, holistic veterinary care, and composting. Each month *Acres U.S.A.* interviews leaders of the ecological agriculture movement and presents analysis of economic, social and political issues related to farming and gardening and acheiving a healthier lifestyle.

Acres U.S.A. also publishes books and sponsors conferences on these subjects. Our mail-order

book catalog features hundreds of hard-to-find books on organic growing from around the world.

For more information call 1-800-355-5313 or visit www.acresusa.com.



HOW TO GROW WORLD RECORD TOMATOES

... or a
105-pound
watermelon!

... or a
12-inch
hibiscus!

... or
17-foot-tall
sweet corn!

... or a
birdhouse
gourd 62
inches
around!

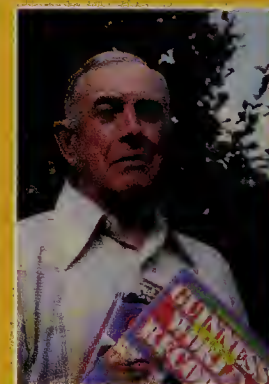
Detailed step-by-step instructions teach you how to grow incredible tomatoes — and get award-winning results on all your garden, orchard, and field crops!

... grow
27-foot-tall
cherry tomatoes!

Charles Wilber is a man on a mission. His entire life has been dedicated to studying nature. And for most of his 80+ years he has been learning how to coax the maximum production from her bounty. He started by emulating the conditions of the forest floor — the same forest where the giant sequoia grow. Then he added in good gardening techniques. The results were simply amazing.

In this almost unbelievable book he tells his personal story and his philosophy and approach to gardening. He reveals for the first time how he grows record-breaking tomatoes and produce of every variety.

Whether your interest is to win blue ribbons, profit from market gardening, or feed the world, you'll never look at gardening the same. And you'll have tons of tomatoes too!



ISBN 0-911311-57-2

5 1 4 9 5



9 780911 311570

Detailed photos lead you through every step of Charles Wilber's intensive gardening methods.